TECHNOLOGY DEPT.

OCTOBER, 1950

Telephone Engineer and Management

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THE NATIONAL TELEPHONE MAGAZINE

Features In This Issue —

- USITA Holds 53rd Annual Convention
- What Is Ahead In Independent Telephony?
- How Radio Can Serve The Telephone Industry
- One Year Under The R-E-A Telephone Loan Program

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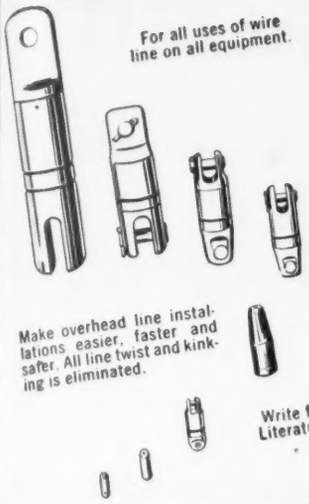

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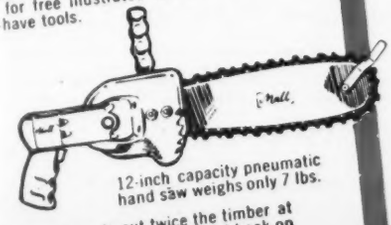

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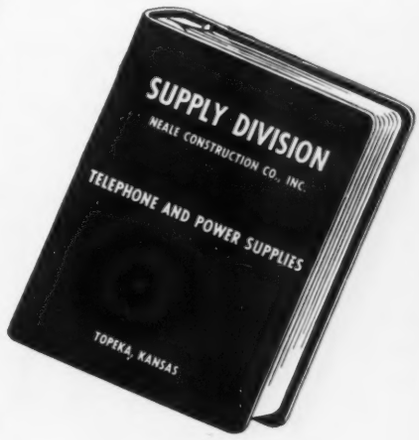

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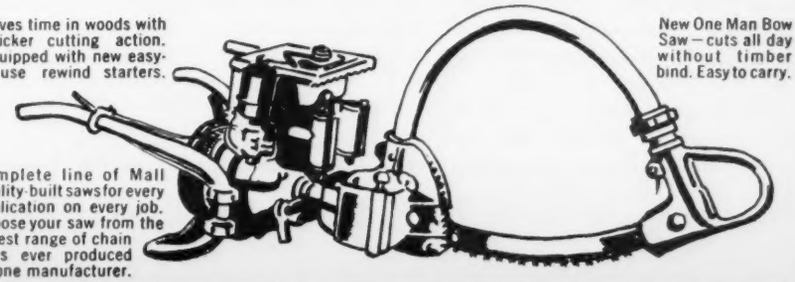

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Across The Editor's Desk

LYNDON FARWELL, secretary of the Los Gatos (Calif.) Telephone Co. is rightfully proud of the recent cut-over to automatic operation. According to Mr. Farwell the cut-over went off without a hitch, but quite a few Los Gatans couldn't resist the temptation to give their new dials a whirl.

• • •

We want to add our best wishes to the many received by NATHAN W. (NATE) BALDWIN who recently retired as Manager of Telephone Sales, Stromberg-Carlson Co. "Nate" was tendered a spendid testimonial banquet by a host of friends, co-workers and company officers, upon completion of more than 45 years of service. Mr. & Mrs. Baldwin have not announced any definite plans for their future life. It is expected that "Nate's" vital interest in the Genesee Chapter, Telephone Pioneers of America, Rochester Club, Chamber of Commerce, Red Men's Club and Masonic Bodies, will occupy a considerable portion of his time.

• • •

WM. A. SEELY, President of Chenango & Unadilla Telephone Corp., Norwich, N. Y., has announced his company's receipt of commission approval of the issuance of $1,000,000 worth of 3½%, 25-year bonds. The commission's approval order also provided that the company may issue 3,000 shares of $100-par common stock and 3,570 shares of 4½% preferred stock for a total value of $657,000.

Of significance in the case is the speed with which it was dispatched. The first hearing was held on July 17 and the commission's order was dated August 30. Our often repeated pleadings for good and accurate company records are again justified. The company's petition and substantiating exhibits were presented in such a manner as to promote prompt handling by the P.S.C. There are no "short-cuts" nor substitutes for a well-kept, accurate accounting system.

The National Telephone Magazine

TELEPHONE ENGINEER and MANAGEMENT

OCTOBER, 1950 **VOL. 54, NUMBER 10**

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Promotion Manager, DON C. SORENSEN
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FRONT COVER

Photograph taken during district meeting of the Missouri Telephone Association at Cameron, Mo., September 12, 1950.

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Free Literature Department

New Product Literature of Practical Interest

All literature described in this department may be obtained by sending in the handy blank at the bottom of this page.

COMMUNITY RELATIONS: Does a business organization owe anything to its community above and beyond the fundamental responsibility of providing jobs, maintaining satisfactory working conditions, and paying good wages?

Most companies believe that a business has a social, as well as economic, obligations to the community. It must conduct itself as a good citizen, its actions must be of good moral character, and it must be active in the support of those projects the community believes necessary to its health and welfare.

These facts were stressed again and again by executives who cooperated during a study of community relations practices. A report based on this study and entitled, "Community Relations: Getting Acquainted With The Community," provides executives with information on proven methods of increasing understanding and cooperation between a company and its community.—*Request FL* 352.

COUNTER:—New bulletin describes a machine that accurately counts anything from dollar bills to World Series Tickets at speeds up to 1,000 per minute. An optional imprinting device permits dating, coding, endorsing or canceling while counting. Among the items handled —at speeds ranging from 500 to 1,000 per minute—are checks and currency, tickets and coupons, labels and cards, stubs and receipts, sales and production slips. Its makers say the new "*Tickometer*" offers "100 per cent counting accuracy", is simple and safe to run, requires no extensive training, and feeds and stacks automatically. Its trip mechanism is reported to be so sensitive that it once picked out a counterfeit bill in the middle of a big run of currency at a leading Eastern department store, rejecting it because it was a hair's breadth too thick.—*Request FL* 353.

FLOOR COATING: New folder describes an acid-resistant coating for floors, walls, machinery, etc., that can easily be applied to all maintenance areas or wherever corrosion is a special problem—on concrete floors, walls, ceilings, structural steel, tanks, pipes, vats, ducts, machinery and equipment.—*Request FL* 354.

HERMETIC SEALS: — New 16 page catalog on hermetic seals covers both standard and custom designed hermetic seals and fully illustrates Hermetic's exclusive multi-point plugs and multi-headers, high voltage terminals, and solutions of miniaturization, high altitude and high ambient temperature problems. Special features enable manufacturers or users of components such as relays, filters, transformers, condensers, etc., to simplify their assembly soldering operation, and provide a foolproof, strain and fissure free hermetically sealed component with a resistance of over 10,000 megohms.—*Check FL* 355.

NEW PIPE MARKER: New bulletin in three colors, describes and illustrates new self-adhesive Quik-Label pipe marker for identifying small diameter pipe and conduit from ¼" to 2" diameter. Description includes other sizes of markers for large pipe and conduit.—*Check FL* 356.

POISON IVY CONTROL—New booklet describes effective means of combating poison ivy and poison oak that makes the exposed skin immune to the oil of the ivy leaves. Booklet states application of a Ply liquid before starting work protects skin. Liquid is greaseless and will last for six to eight hours if the skin is not washed. At the end of the day washing with soap and water quickly removes the protective coating.—*Request FL* 357.

SOLDERING PRODUCTS: The complete line of soldering products made by P. Wall Manufacturing Co., and its new division, Harmic Manufacturing Co., is described in the new Wall catalog. These products include gasoline and kerosene blow torches, self-generating alcohol blow torches, electric soldering irons, solder, splicer's furnaces, paraffin supplies, and compound kettles. Also described are Wall oilers, grease buckets, shop torches, and steel gongs and shells. —*Request FL* 358.

SEND IN THIS COUPON FOR MORE INFORMATION

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Please forward the following literature described in the Oct., 1950 issue of TELEPHONE ENGINEER AND MANAGEMENT. (Check information desired.)

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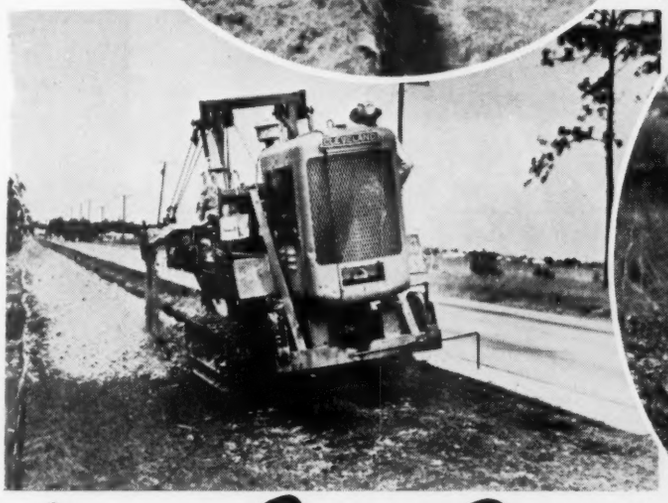

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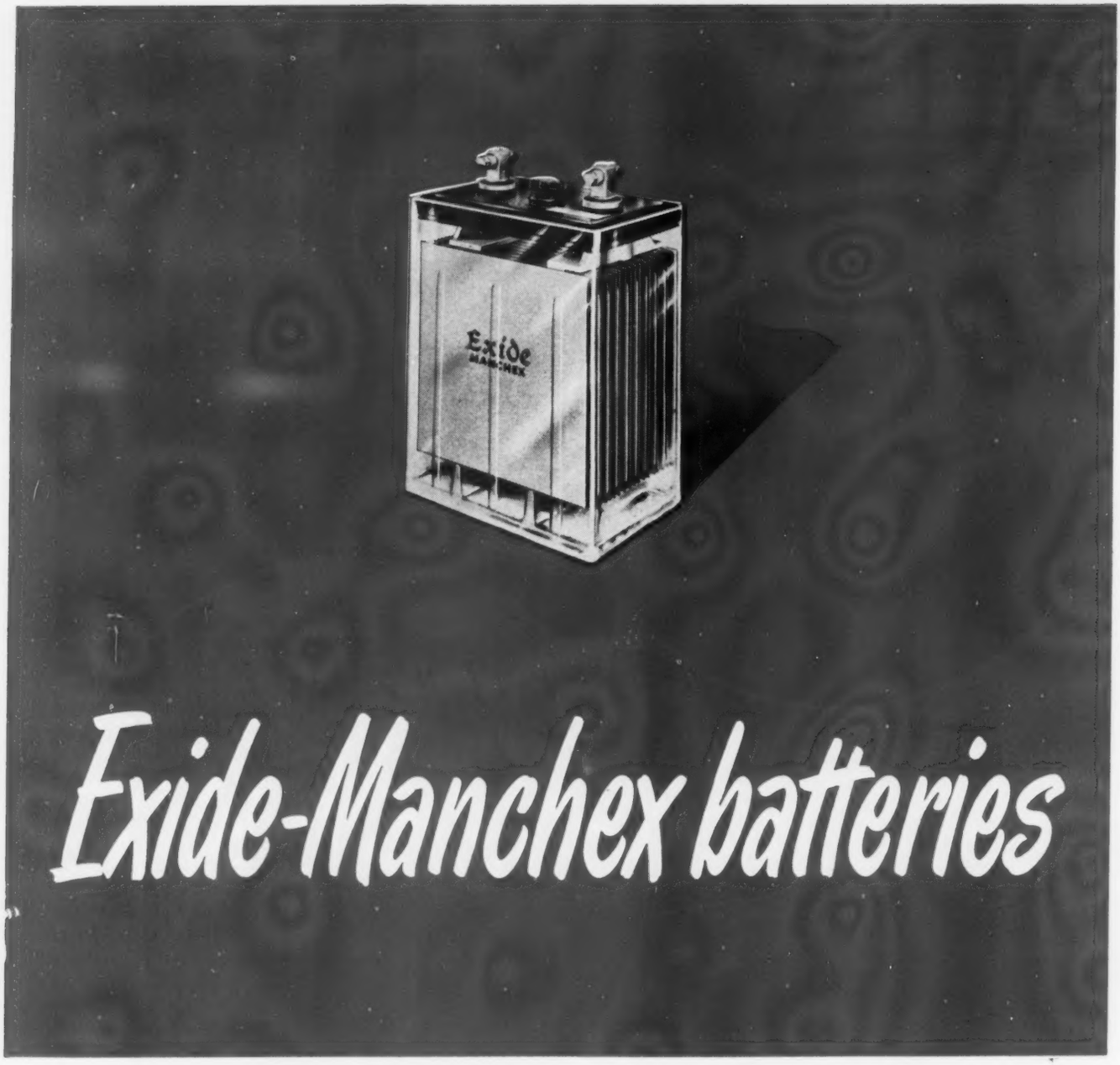

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NEWSLETTER
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ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

NEWSLETTERS *on Alternate Weeks*

October 15, 1950

Dear Sir:

National Association of Railroad & Utilities Commissioners (NARUC) has designated subcommittee of its Excess Profits Tax Committee to confer with Senate Finance Committee, House Ways & Means Committee & Congressional Internal Revenue expert staff on serious plight of utilities if excess profits taxes are levied upon them. Subcommittee is composed of state commissioners in states adjacent to Washington. Maryland Commission Chairman John H. Hessey is subcommittee head. Committee members are: Pennsylvania Commissioner B. Frank Morgal, West Virginia Commissioner Charles E. Anderson & Virginia Commissioner H. Lester Hooker.

* * *

Recent loan allocations made by Rural Electrification Administration include $409,000 to Oklahoma Tel. Co., Kiowa, Okla. Funds will permit company to quadruple number of subscribers it now serves -- increase from 342 to 1,350 rural telephones -- by construction of 437 miles of new lines & rebuilding of 92 miles of lines. New dial equipment will be installed.

Other loan allocations went to Powell Telephone Co., Powell Station, Tenn., for $188,000 to add 30 miles of new line, install dial equipment, & serve 245 more subscribers; Park Region Mutual Telephone Co., Underwood, Minn., for $159,000 which will also permit dial installation & allow company to construct 5 more new lines & rehabilitate 120 more miles of present lines: Griswold Cooperative Co., Griswold, Ia., for $171,000 to add 37 miles of new lines for 206 additional subscribers & rehabilitation of 103 miles of present line; & Gardonville Cooperative Tel. Assoc., Brandon, Minn., for $321,000 for construction of 130 miles of new line & rebuilding 196 miles of present line. Gardonville cooperative will also install dial equipment & will serve about 1100 subscribers.

* * *

First installation of telephone facilities put into service through REA loan was celebrated in recent ceremonies at Fredericksburg, Va. Commemoration exercises included three-mile-long parade, call from President Truman to first subscriber of Fredericksburg & Wilderness Tel. Co. to receive new service during REA-financed dial cutover, & drawing among Independent's 170 subscribers for 5 free toll calls. Company has installed unattended dial switching station to provide dial service

for its previous subscribers & few who have been added thus far during dial changeover. New lines must be constructed to serve 140 more subscribers.

* * *

Vital role of communications in all phases of civil defense operations again has drawn considerable attention in report of federal agency on civil defense problems when civil defense recommendations of National Security Resources Board were transmitted to Congress by President Truman. Throughout report paramount requirement for adequate basic & standby communications facilities were emphasized. Proposed new Civil Defense Administration, although it generally would be planning & coordinating agency, leaving actual operations of civil defense program to states & municipalities, would be given more specific operational responsibilities for communications under legislative draft setting up CDA, which accompanied report.

* * *

HIGHLIGHTS: Earl Meidlinger has leased Finlayson (Minn.) Tel. Exchange from E. D. Askay. . . . Ben T. Mueller, Mt. Vernon, Wash., commercial supv., Northern div'n., West Coast Tel. Co., retired upon completion of 38 years' service. . . . B. Knuth, mgr., Woodstock (Minn.) Tel. Co. announced exchange will be converted to automatic operation. . . .Jones & Choctaw Tel. Co., Jones, Okla., will install new swbd. . . . Tekamah (Ks.) Farmers Tel Co. started line improvement project. . . . Texas Tel. Co. started $25,000 cable project at Sherman, Tex. . . .Berkshire (N. Y.) Tel. Co. filed articles changing capital stock from $50,000 to 2,500 shares. . . . Chenango & Unadilla Tel. Corp., Norwich, N. Y., filed articles changing capital stock from $1,500,000 to $3,000,000. . . . Eastex (Tex.) Tel. Co-op, Inc., granted easements by Commissioners Court, Henderson, Tex., to allow erection of poles & lines along county right-of-way.

Minnesota Tel. Co. completing conversion of Littlefork, Minn., to automatic operation. . . . E. J. Stikeman elected pres., Brooklyn, (Mich.) Tel. Co.; succeeds Dan J. Schueren, resigned. . . . T. A. Underwood, Greenwich, Conn., named vice pres. & gen. mgr., Citizens Utilities Co. of California, Redding, Calif.; succeeds D. A. Perigo, resigned. . . . Liberty Tel. Co., Tripp County, S. D., incorporated. Directors include: J. E. Mackaman, Donald McCabe, R. G. Pettit & Andrew Osse, Colome, S. D. . . . Frank Schaeffer, Pratt, Ks., named mgr., Edwards County Mutual Tel. Co., Lewis, Ks. . . . Northwestern Tel. Service Co. started construction of new bldg. at Archbold, Ohio. . . . Joe Reiter appointed mgr., Havana Tel. Co., Indianola, Neb.

Ray W. Smith, Editor

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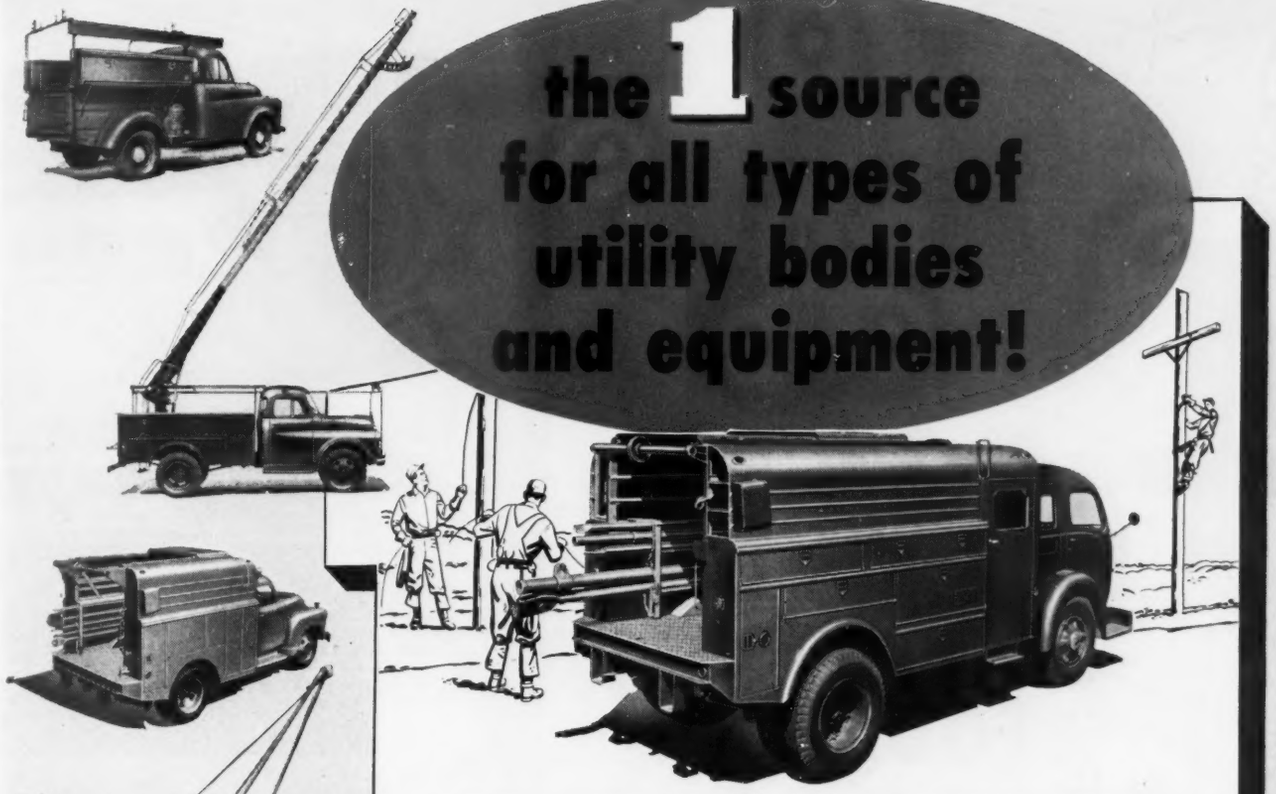

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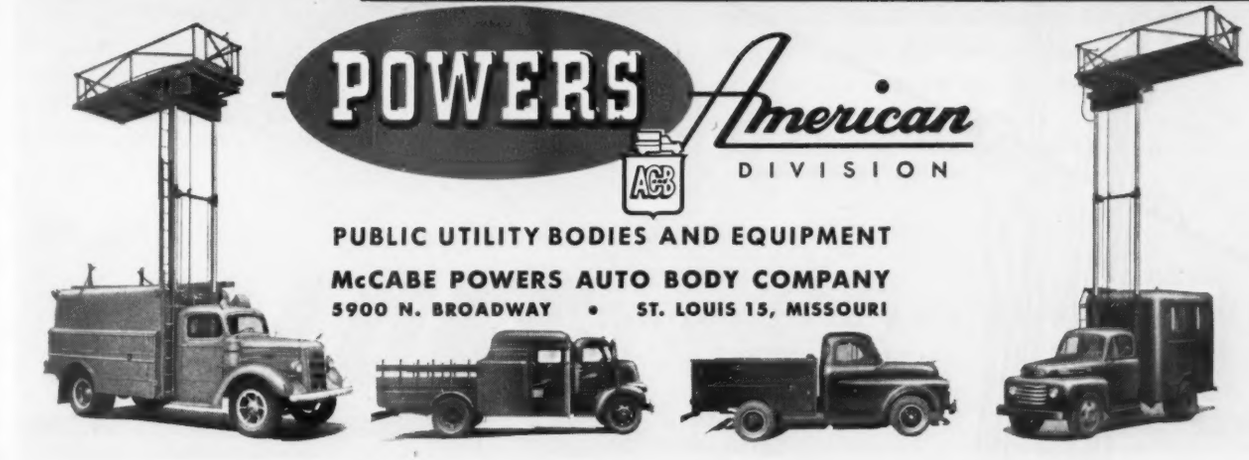

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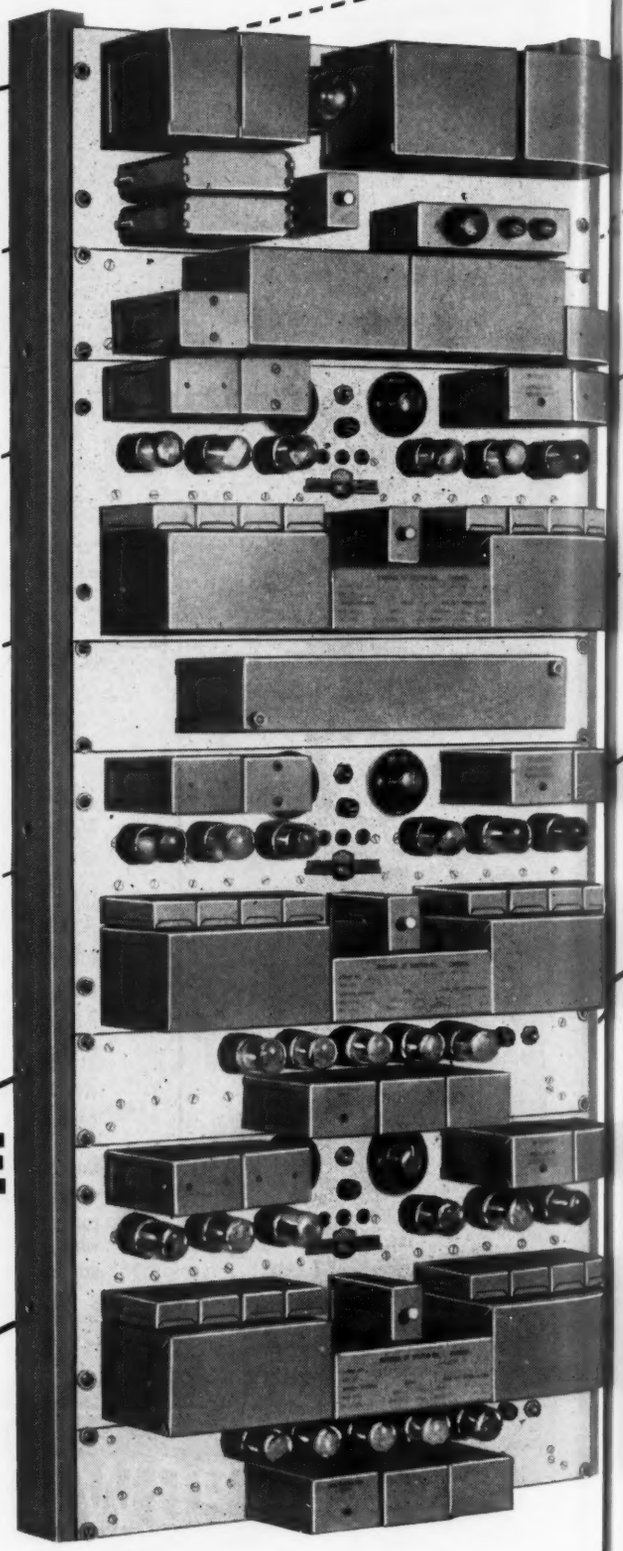

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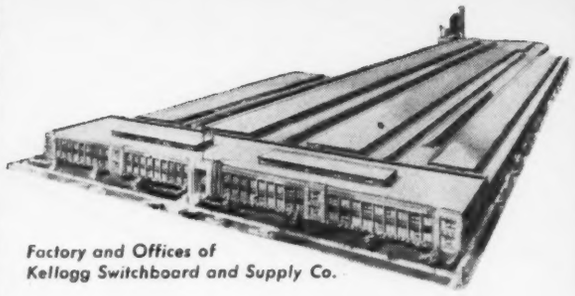

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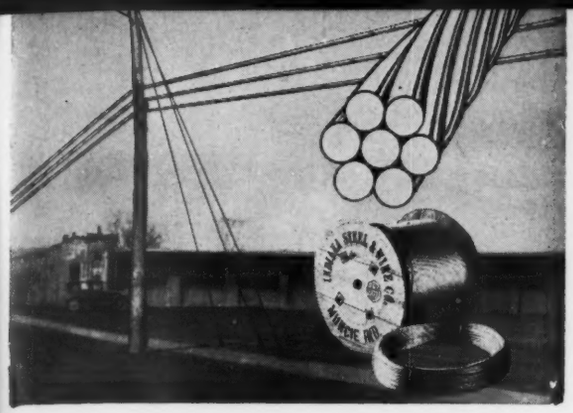
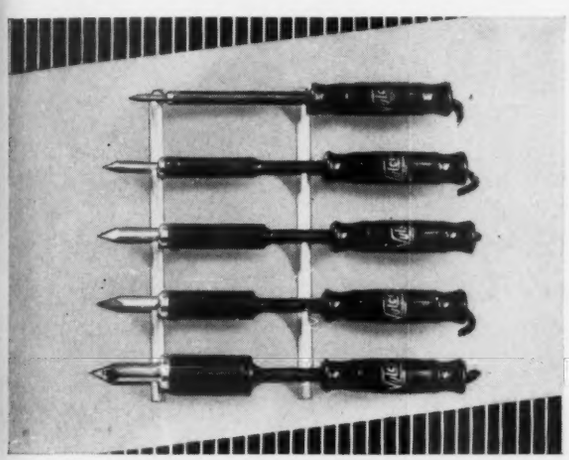
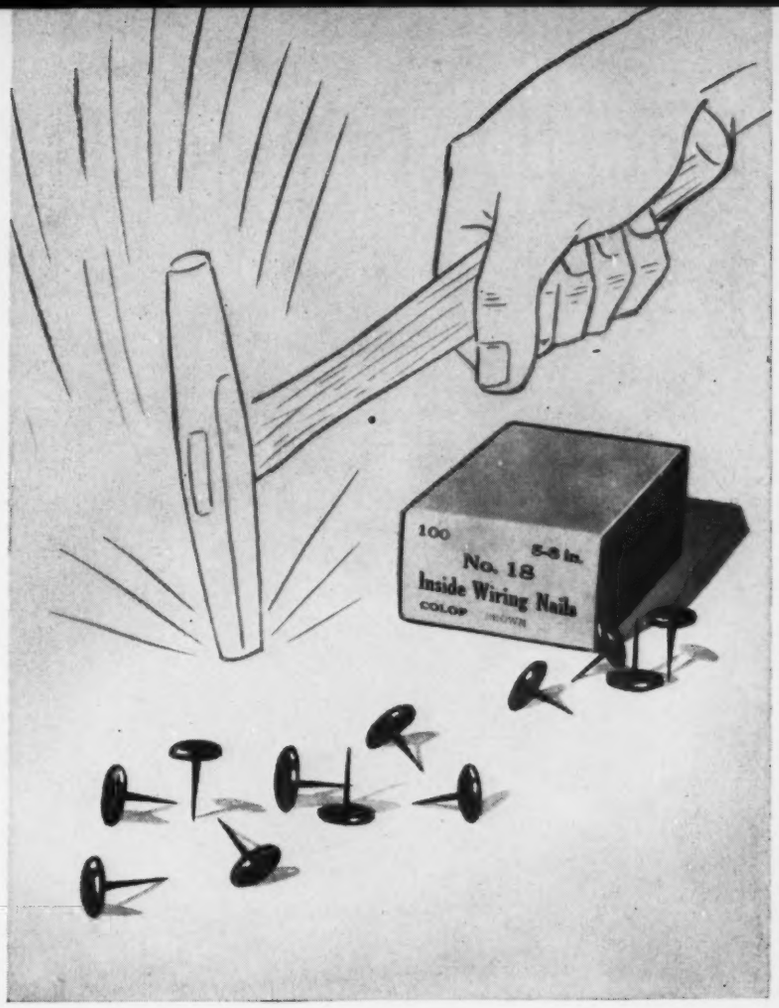


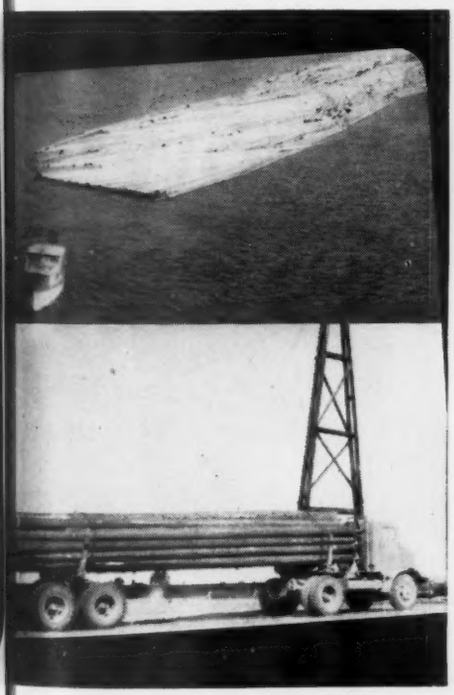
The Time-Tested Steel Strand! A heavy, ductile, tightly adherent zinc coating applied by the famous Crapo Galvanizing Process, provides lasting protection from corrosion in Indiana Crapo Steel Strand. Made by the INDIANA STEEL & WIRE CO., its rugged strength minimizes maintenance.



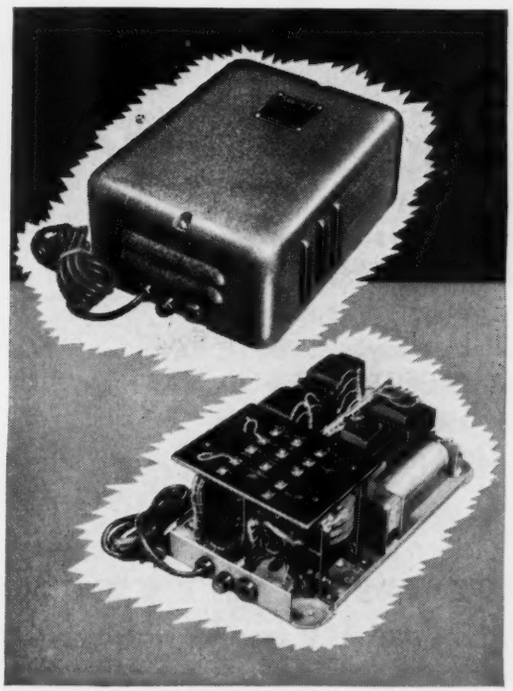
Make your next selection of soldering irons from the famous Vulcan line that includes both plug tip, above, or screw tip. Correctly designed for the steady production and constant delivery of ample heat — operates from either DC or AC. Availble in 8 sizes. Made by the VULCAN ELECTRIC CO.



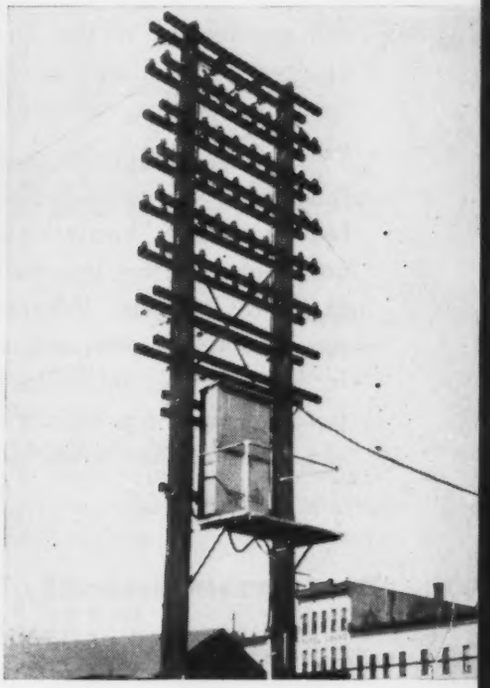
Why Do it the Hard Way? Making neat installations is easy—when you use Rhodes Telephone Wiring Nails! That's because they're especially designed for telephone work, and their quality is insured in rigorous driving, bending, withdrawing and immersion tests. Made by M. M. RHODES & SONS CO., in several colors and pin-lengths.



Famous for Strength and Durability, Northern White and Western Red Cedar Poles flow toward the MacGILLIS & GIBBS CO. plants in a steady stream. There they're processed and creosote-treated to insure longer life. Order them now and watch replacement costs drop!



12 New Models—5 Cabinet Sizes comprise this new line of packaged power Sub-Cycle "RT-Units" for P.B.X. and small switchboards. Both ringing and talking power are combined in one cabinet. Made by LORAIN PRODUCTS CORPORATION. Write for Bulletin 159.



Economy in Overhead Construction is assured when crossarms manufactured by the CONTINENTAL CROSS-ARM CO., INC., are a part of your wire and pole installation. Made of fully seasoned American woods—built to sound standards of dependability.

From this Enlarged Plant . . .

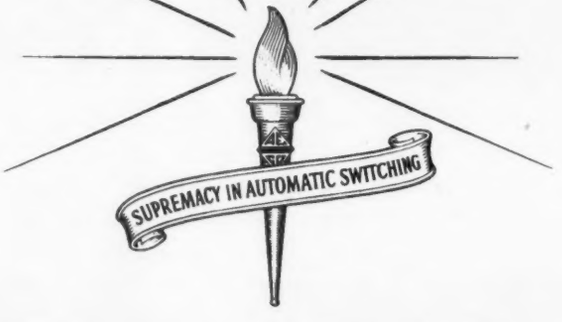
. . . Come

AUTELCO MEDITERRANEA S.A.T.A.P.

PRODUCTS and "KNOW HOW"

Autelco Mediterranea S. A. T. A. P., Automatic Electric's affiliated company in Milan, Italy, now occupies its new and larger plant making possible still greater production of Strowger Automatic equipment for Italy's public service administrations and private industry.

To its own production, engineering and service facilities, Autelco Mediterranea adds the entire facilities and "know-how" of its associated companies in the International AUTOMATIC ELECTRIC Group. Wherever you may be, this same complete service is available to you. Look to International AUTOMATIC ELECTRIC Corporation for the products and "know-how" of an organization that is world-wide in scope.



International AUTOMATIC ELECTRIC Corporation

1033 W. VAN BUREN STREET, CHICAGO 7, U.S.A.

INTERNATIONAL AUTOMATIC ELECTRIC SALES CO., S. P. A.
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Selling Companies and Agents Throughout the World

In any **MODERN** switchboard installation—

Photo courtesy of Stromberg-Carlson

the choice is **ACCURATE AUTOMATIC TOLL TIME CALCULATING AND RECORDING**

by **CALCULAGRAPH**

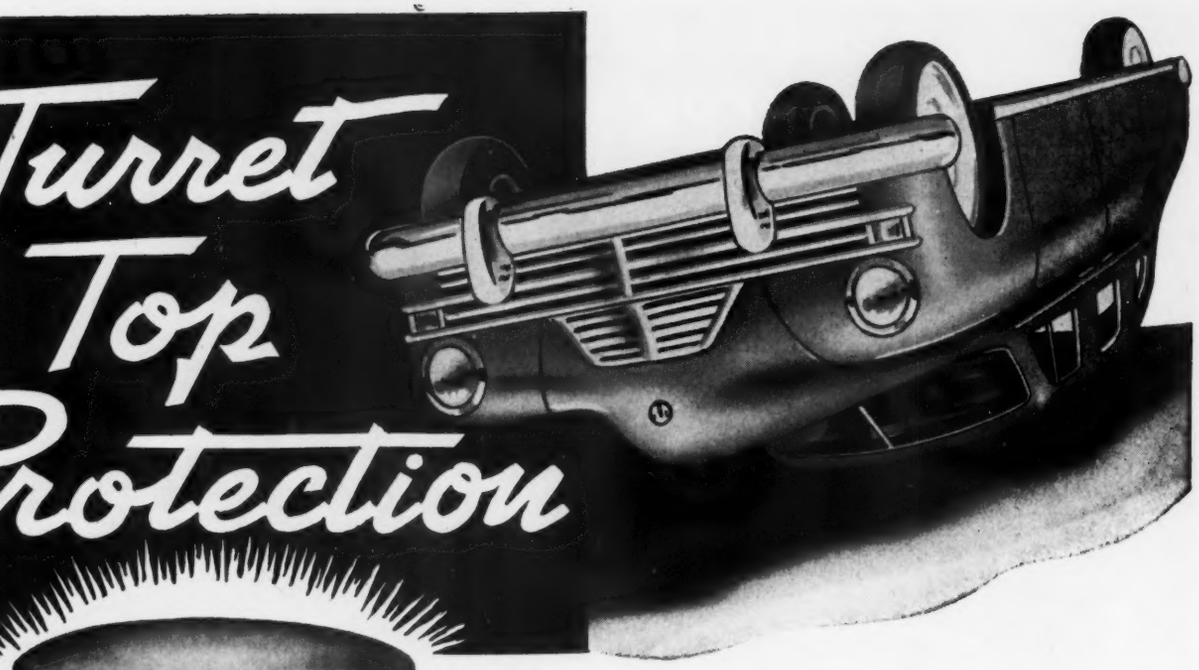
Because they quickly save many times their initial cost, CALCULAGRAPH permanent printed records eliminate switchboard detail work, speed service. Accuracy-to-the-second permits collection of all the revenue due on every call. CALCULAGRAPHS are precision instruments featuring high visibility dials, smooth silent lever action. Available in several models, they can be engineered into new equipment by your switchboard builder or easily included in your present set-up. For complete information write Dept. A.

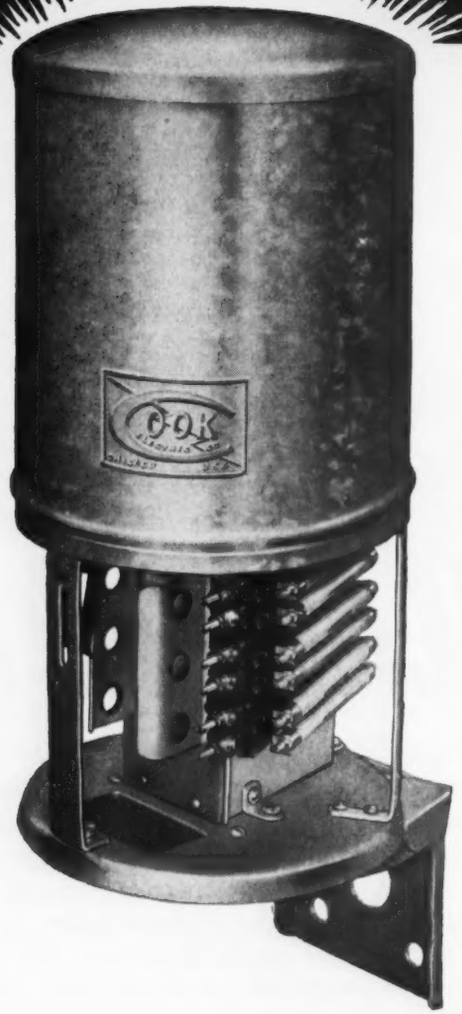
CALCULAGRAPH COMPANY

HARRISON • NEW JERSEY

THE STANDARD OF ACCURACY SINCE 1892

Turret Top Protection





LIKE YOUR automobile body top, the new Cook "Turret Top" hood cap is now made of one piece deep drawn steel. The steel in the hood is 25% thicker than previous manufacture, with no increase in weight due to the new design features. It carries a 200 pound man supported on one foot without showing indentation or distortion. The new hood is of all-welded construction with side reinforcement, and hot dipped galvanized. It is easy to slide over the hood guides and provides for greater strength, longer life and improved appearance. Its greater protection further adds to the durability of all Cook Protected Pole Cable Terminals.

These improvements are now incorporated in all of the already famous Cook Protected Pole Cable Terminals without additional cost to the user.

All Cook Protected Pole Cable Terminals, therefore, will now be furnished with the New Turret Top Hood.

COOK ELECTRIC Company

2700 N. SOUTHPORT AVENUE CHICAGO 14, ILLINOIS

On the job records prove that the Neale Model D Pull-type Cable Spinner speeds new work, keeps line charges low.

Cut Maintenance Costs— Speed New Construction

Neale Model B One Man Cable Spinner operates from ground or strand.

Molded Lead Shield gives you more protection at the pole, assures longer life.

Little Giant Slack Puller pulls slack quickly, makes repairs easy.

Cable spinning lengthens plant life . . . lowers maintenance costs ⅔ . . . speeds new construction—telephone companies from coast to coast report.

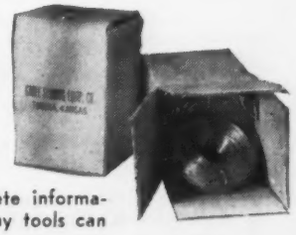
That's why cost-conscious management everywhere is specifying spun cable for new construction and maintenance of existing lines.

And that's why more and more independent telephone companies are equipping their crews with tools designed especially for cable spinning —Cable Spinning Equipment Company tools.

You, too, will find cable spinning fast . . . practical . . . economical . . . when your crews are equipped with Cable Spinning Equipment Company tools. There's a complete line to choose from.

For BEST RESULTS—Use NEALE Wire

Available in 7 different types and sizes, famous Neale Spinning Wire meets the toughest construction and corrosion conditions.



Phone or Write your jobber today for complete information on how Cable Spinning Equipment Company tools can help you keep plant investment low.

CABLE SPINNING

EQUIPMENT CO.

TOPEKA, KANSAS Phone 3-1829

LET A TELEPHONE MAN TELL YOU WHAT OUR 6 YEARS OF SERVICE MEANS TO YOU

Here's what Verne B. Clark, Chairman, USITA Advertising Committee, has to say about the Telephone Advertising Institute: "In the space of just six years, the Telephone Advertising Institute has well earned the right to its slogan 'Advertising Voice of the Independent Telephone Industry.' Beginning in September, 1944, after a smaller "pilot" issue in April, the TAI has been serving its subscribers with a *complete and well-balanced public relations and advertising program.*

During its six years of service, TAI has very nearly doubled its list of subscribers. Beginning with slightly over 600 exchanges, it now serves nearly 1,200.

This has always been a flexible program, designed for use by the *smallest* as well as the *largest* company—and a *program that could always fit into the advertising budget that even the smallest company could well afford.*"

Write us today for more information on TAI service, which can be the biggest bargain in your operating budget.

TELEPHONE ADVERTISING INSTITUTE

Advertising Voice of the Independent Telephone Industry

326 W. Madison St. Chicago 6

Telephone—CEntral 6-6503

LONGER SPANS AND LONGER LIFE

with new Amertel EHS Wire and PFT Armor Rods

THIS ILLUSTRATION SHOWS U·S·S Amertel EHS Telephone Wire protected against vibration by an American PFT Armor Rod.

New Amertel EHS Telephone Wire offers the utmost in the combination of high tensile strength and transmission qualities. It makes possible new economies in construction and maintenance costs. Longer spans are possible, thereby reducing the number of poles needed, with consequent savings in materials and labor. Amertel EHS is especially effective in rural areas where telephone lines and R.E.A. power lines are installed on the same poles—and spans are extra long.

When American PFT Armor Rods are used, breaks due to vibration are practically eliminated, and they give superior protection during sleet and snow loads.

For longest possible life and uninterrupted service, install Amertel EHS Telephone Wire and American PFT Armor Rods. For complete technical information on these products, and on our Amertel-135 and regular "E.B.B.," "B.B." and "Steel" grades, write for our free book.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERTEL
TELEPHONE & TELEGRAPH WIRE
UNITED STATES STEEL

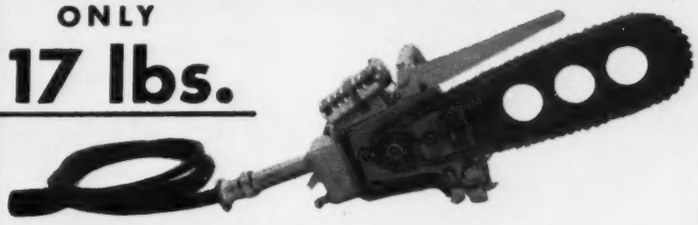
For Limbing and Trimming You Can't Beat the NEW

HOMELITE

FEATHERWEIGHT

One Man Electric Chain Saw

ONLY
17 lbs.



Complete with a 14 inch Blade and Chain

It's the height of efficiency for off-the-ground cutting

First, feel the heft of it . . . only 17 pounds . . . perfect for working up in trees. Yes, by all means, feel the cut of it . . . the *fast, smooth* cut of it.

Built with a narrower kerf and simpler design, this new, featherweight, high-cycle, Homelite Chain Saw requires less power to operate. Therefore it cuts faster. Moreover, binding and chattering are eliminated . . . the life of the chain is greatly increased.

Built for every-day, continuous service, Homelite's newest addition to its chain saw family is the last word in safety, simplicity and economical operation. No brushes or commutator to replace or repair. No clutch to adjust. No servicing except periodic cleaning and lubricating.

Powered by a Homelite Carryable Dual-Purpose Generator

This new 17 pound chain saw, like the other larger Homelite Electric Chain Saws, operates from a Homelite gasoline-engine-driven-Generator that provides plenty of power for not only high-cycle tools, but also standard 110 volt electric tools and floodlights as well.

Write, right now, for complete information.

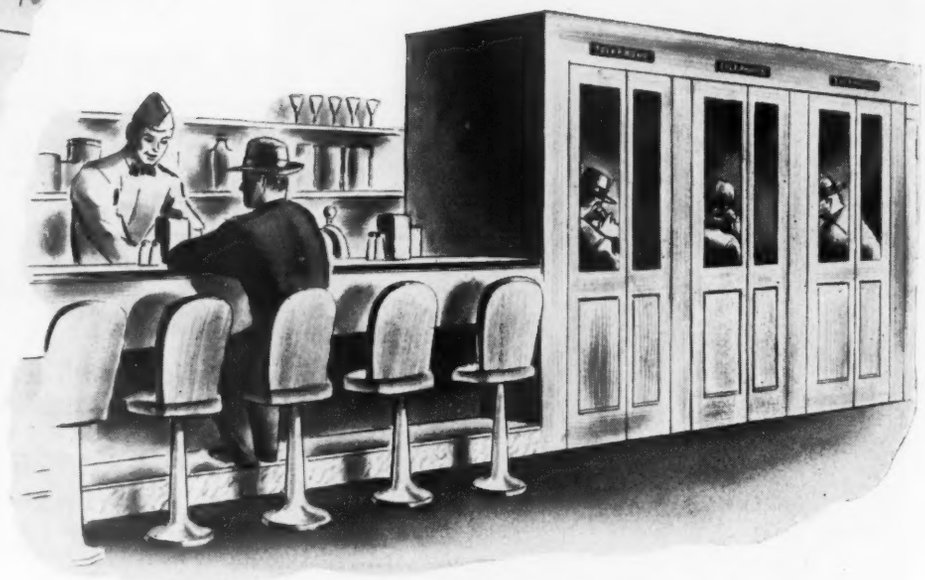
HOMELITE
Corporation
1210 RIVERDALE AVENUE
PORT CHESTER, N. Y.

MANUFACTURERS OF HOMELITE CARRYABLE PUMPS • GENERATORS • BLOWERS • CHAIN SAWS

THIS-

Every "borrowed" call represents lost income.

OR THIS?



Batteries of paystations like this are producing substantial revenues for many telephone companies.

Autelco PAYSTATIONS...SAVE LOST INCOME

One of the "60 series types of Autelco Paystations.

When you install paystations for convenient use by the public, you convert "borrowed calls" into immediate operating-company income. Telephone users invariably prefer the privacy of paystations and are glad to pay for their convenience.

Provide enough paystations in drugstores, hotels, bus stations and other public places, to save this otherwise lost income. It will add substantially to your revenue.

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

AUTHORIZED DISTRIBUTORS FOR AUTELCO PAYSTATIONS

Automatic Electric Sales Corporation . . . Graybar Electric Company . . . Kellogg Switchboard & Supply Company . . . Leich Sales Corporation . . . The North Electric Mfg. Company . . . Stromberg-Carlson Company.

HIGHER DEPENDABILITY AT LOWER OVERALL COST

—IT PAYS TO STRING Copperweld TRADE MARK LINE WIRE

No matter how you figure, it pays to string along with Copperweld* Line Wire—the only wire that combines the rugged strength of steel with the conductance and permanence of copper.

Because Copperweld is built to last, you can be sure of its efficient, trouble-free performance . . . in all kinds of weather, in every climate—year after year. You can string longer spans—save on poles, hardware and accessories—reduce construction costs—because Copperweld Line Wire is 2 to 3 times stronger than hard-drawn copper wire and has greater tensile strength than any wire having comparable electrical properties. And each year you'll save on repairs and maintenance because Copperweld is non-rusting—its original strength remains permanent.

In addition, Copperweld Line Wire is light in weight, pliable, easy to string and has better voice and high frequency transmission characteristics than any other high-strength conductor. When you consider these proved advantages, you'll find it pays to use Copperweld for all your line wire requirements.

Copperweld Costs Less because it Lasts Longer

GRIP-FLEX 38
The Ideal Insulator Tie for Use With Copperweld Line Wire

COPPERWELD STEEL COMPANY
Glassport, Pa.
SALES OFFICES IN PRINCIPAL CITIES

*Trade Mark

Copperweld TRADE MARK **NON-RUSTING Line Wire**

SOLD BY LEADING DISTRIBUTORS

The engineer pictured here is checking the operation of an Automatic Gain Control panel of a 3-channel terminal rack.

From First Principles to Finished Product

The principle of automatic gain control whereby a constant level of output is obtained despite variations in the level of incoming signals is frequently employed in radio communication circuits. It can be of equal value when applied to line communication problems and Automatic Telephone and Electric Co. Ltd. have developed a novel method of using this technique in their 3 and 12 channel carrier systems. The result is that sudden changes in line characteristics are automatically corrected without the necessity for intervention on the part of the maintenance staff. This feature helps to ensure maximum reliability in the finished product.

AUTOMATIC TELEPHONE AND ELECTRIC CO. LIMITED

Export Department: Strowger House, Arundel Street, London, W.C.2
Telephone: TEMple Bar 9262. Cablegrams: Strowgerex, London.
Strowger Works, Liverpool, England.

PRODUCTS OF THE COMPANY INCLUDE: DIRECTOR AND NON-DIRECTOR AUTOMATIC TELEPHONE EXCHANGE EQUIPMENT, AUTOMATIC TRUNK EXCHANGES, RURAL AUTOMATIC EXCHANGES, PRIVATE AUTOMATIC EXCHANGES, PRIVATE AUTOMATIC BRANCH EXCHANGES, SINGLE AND MULTI-CHANNEL (CARRIER) TRANSMISSION EQUIPMENT; INTERCOM KEY-CONTROLLED TELEPHONE EQUIPMENT, CENTRALISED SUPERVISORY REMOTE INDICATION AND CONTROL EQUIPMENT; "RYTHMATIC" RIPPLE CONTROL EQUIPMENT; "ELECTROMATIC" VEHICLE-ACTUATED TRAFFIC SIGNALS; MINE TELEPHONES AND COLLIERY SIGNALLING EQUIPMENT.

A.1271-B104

A Shop on wheels

built to take the trouble out of trouble-shooting

This new International Truck will help prevent the lost time and lost tools that mean trouble on trouble-shooting jobs.

That specially-designed body is all-steel and built like a safe. It gives a service man more compartment area—so he can carry more tools and supplies with him wherever he goes. His equipment is kept in order, protected from the weather by a sliding roof under the ladder rack and slam-action compartment doors that can all be locked with one key.

You'll find more built-for-the-job efficiency under the hood—in International's new Silver Diamond valve-in-head engine. Developed exclusively for light trucks at a cost of 11 million dollars, the Silver Diamond combines power and pickup with proved gas and oil economy.

That new Comfo-Vision Cab is the "roomiest on the road"—with deep-cushioned seating, controlled heating and ventilation, perfect visibility from behind a big one-piece Sweepsight windshield.

New Super-steering gives the driver greater control of the truck from a more comfortable position . . . more maneuverability with less effort at the wheel.

And for the payoff—this truck is *heavy-duty engineered,* built with all-truck stamina by the specialists who developed heavy-duty International Trucks, the leaders in the field.

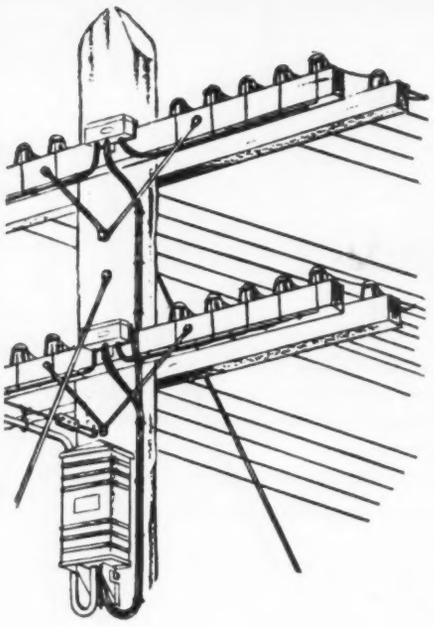
If that sounds good on paper, the next step is in the direction of your International Truck Dealer or Branch salesman. It will be a move for the good of your business—why not make it now?

International Harvester Builds
McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks
Industrial Power . . . Refrigerators and Freezers

Heavy-Duty Engineered **to save you money**

INTERNATIONAL TRUCKS

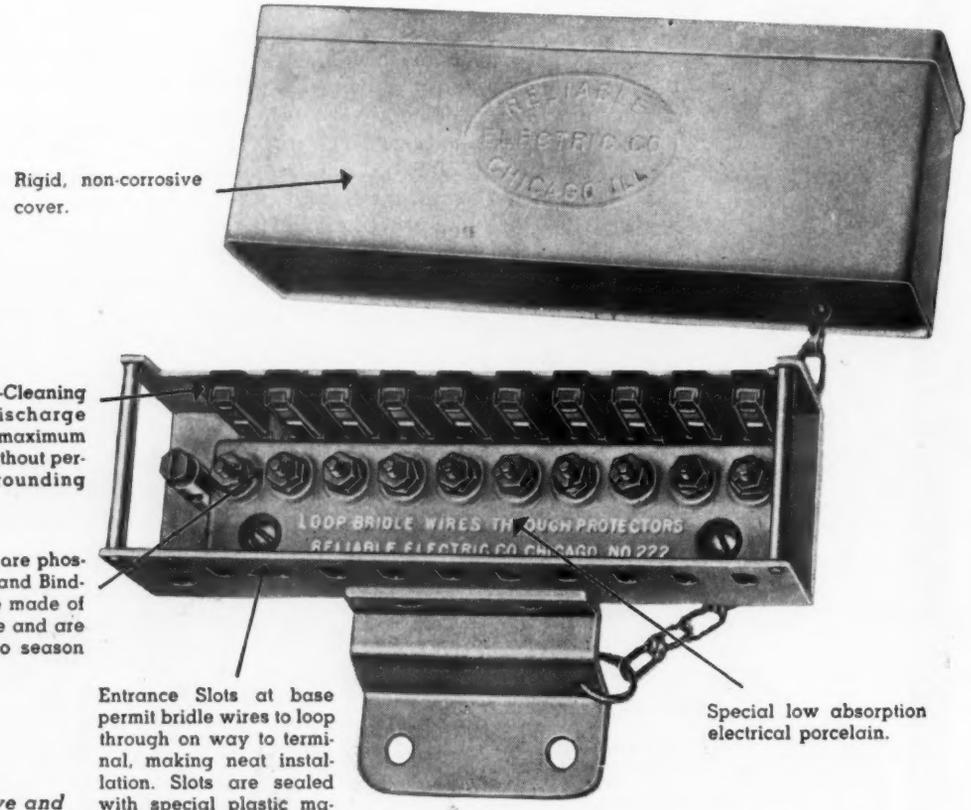
INTERNATIONAL HARVESTER COMPANY CHICAGO



Let's Talk Facts . . .

For Exposed Line Protection . . . . The No. 222 Is Service Proven

The No. 222 is used effectively to drain static from exposed lines; at underground rural railroad crossings, protection of line repeating coils and similar work. The No. 222 Outdoor Arrester is self-cleaning. Reliable Self-Cleaning Sawtooth Discharge Blocks, which are standard, provide dependable service without danger of grounding the line unnecessarily. Design includes one-piece special low absorption porcelain, with ten-wire capacity. Binding posts are silicon bronze and spring clips are phosphor bronze—not subject to season cracking and, as on all Reliable equipment, the cover is rigidly constructed of a non-corrosive alloy. Entrance slots are sealed against weather and insects. Build for the future — always specify Reliable!



Rigid, non-corrosive cover.

Reliable Self-Cleaning Sawtooth Discharge Blocks give maximum protection without permanently grounding the line.

Spring Clips are phosphor bronze and Binding Posts are made of silicon bronze and are not subject to season cracking.

Entrance Slots at base permit bridle wires to loop through on way to terminal, making neat installation. Slots are sealed with special plastic material to keep out weather and insects.

Special low absorption electrical porcelain.

Telephone Protective and Terminal Equipment For All Station, Line and Central Office Needs.

Reliable

ELECTRIC COMPANY

3145 CARROLL AVENUE • CHICAGO 12, ILLINOIS

OVER 40 YEARS' *Service* TO THE TELEPHONE INDUSTRY

EDITORIAL

There Are No "Excess Profits" In The Telephone Business

THE NATIONAL ASSOCIATION of Railroad and Utilities Commissioners has appointed a committee to study the effects on regulated utilities of the coming Federal excess profits tax. The Association wants to avoid, this time, the effects on the earnings of regulated utility companies which were created by the excess profits tax imposed during World War II—under which tax, the Association says, "unusually large and discriminatory tax liabilities were created which reduced net earnings of regulated public utilities to an extent where constructive and effective utility regulation was greatly hindered."

"It would appear in the public interest," declares this Association, "to provide a basis for determination of excess profits taxes for such regulated businesses, or the inclusion of such other provisions as would achieve the primary purpose of raising tax revenue without impairing effective rate regulation."

To this all regulated utility companies and also their patrons should say "Amen." Because in regulated utilities, excess profits are not likely to arise from any cause, in the sense that they can be and usually are earned by non-regulated industrial businesses. And if the government takes another tremendous bite out of the already meager earnings of the utilities—particularly the telephone business—there will not be enough left out of their present rate of earnings to pay expenses and also to raise the necessary additional capital that will be needed by the utilities for the large expansion of facilities they will be called upon to provide.

We can get a glimpse at what this kind of situation would mean by studying the records of the 200-odd Class "A" Independent telephone companies for the year 1945, when the excess profits tax of the last war was in effect. That year these companies had a combined gross revenue, from all sources, of about $133 million. Taxes took about $28 million of that revenue, with the Federal government getting approximately $20 millions of the money. These companies earned that year, before taxes, about 9.5% on their total investments in plant, property and the like, but taxes took 6.3% of the earnings— about 21% of the gross revenues—and the companies had left only 3.2%.

There would seem to be but one answer to such a situation as that—higher rates for telephone service. But that answer is faulty, because the higher the rates and earnings, the higher the taxes, too. And if the rate of the excess profits tax is in even the neighborhood of the rate applicable during the war, a lot more dollars would have to be paid to the telephone company by the telephone user in order to get one additional dollar net for the company.

The real answer to this situation lies in the direction the utility commissioners are taking; that is, to deal with regulated utilities in matters of this kind differently than the manner of dealing with non-regulated industries.

Already there is precedent, and from a high source, for recognizing the fact that regulated utilities cannot be dealt with, on a practical basis, in the same way that non-regulated businesses are dealt with. In the recently enacted Defense Production Act, under which price controls can be put into effect, Congress has left the regulation of utility rates to existing regulatory bodies.

This is a change from the situation in World War II, when a Federal agency—OPA—could and did intervene in and object to applications for increases of utility rates. It is an improvement induced by experience. It is also clear from experience that, as the utility commissioners have pointed out, the excess profits tax should be applied differently, this time, to regulated utilities.

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There's a Simple A

Standardize on Stromberg-Carlson dials—America's only dial with the transparent plastic dust cover. Keeps out bugs, dust, lint and the like, yet provides easy observation of moving parts and quick access to the interior through a snap-on lid.

STROMBERG-CARLSON Factory, General Offices: Rochester 3, N.Y. • Branch Office Atlanta 3

TELEPHONES, SWITCHBOARDS • SOUND EQUIPMENT AND ELECTRONIC CARILLONS • INDUSTRIA NTERCO

Answer

TO THIS COMMON CAUSE OF DIAL TROUBLE...

If you handled as many dials as some companies do, you'd know that the above photograph is no exaggeration of the things that can get into a dial without dust cover protection.

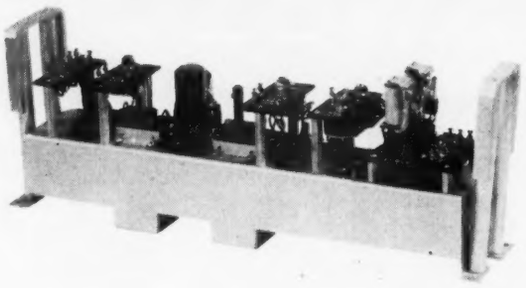
Atlanta 3 • Chicago 6 • Kansas City 8 • San Francisco 3 • In Canada: Stromberg-Carlson Co. Ltd., Toronto

INTERCOMMUNICATION SYSTEMS • RADIOS, RADIO-PHONOGRAPHS, FM AND TELEVISION

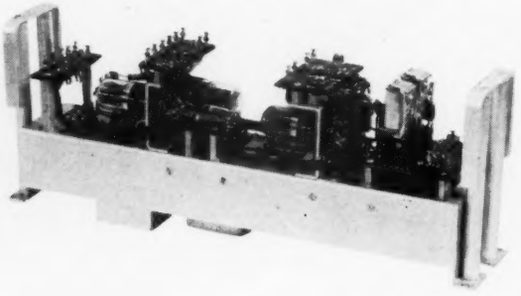
AUTOMATIC ELECTRIC *Solves*

CIRCUIT PROBLEMS and PROBLEM CIRCUITS

with *Lenkurt* "PERFORMANCE-ENGINEERED" CARRIER SYSTEMS



Type 440A Pulse Transmitter provides full-duplex operation of up to 18 dialing channels when used with the **Type 444A Pulse Receiver** (below).



Lenkurt Carrier systems provide really economical use of your outside plant by providing as many as 12 talking paths and associated dialing channels over ONE pair of wires!

But suppose you need automatic dialing channels for your present physical, phantom or carrier circuits? Automatic Electric solves that problem too! With the Lenkurt Type 440A Pulse Transmitter and Type 444A Pulse Receiver (shown above) you can gain up to 18 two-way dialing channels on one carrier voice channel. These dialing channels will be substantially unaffected by heavy power exposures since lines are relatively noise-free at carrier frequencies. And they'll eliminate erratic pulsing often caused by earth currents on ground-return dialing legs. Thus, Lenkurt Carrier provides the most modern, most versatile method of gaining dependable, low cost dialing channels—so good they meet all requirements for inter-toll dialing.

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Washington Bureau Reports

MOBILIZATION leaders sound warning note that road ahead calls for greater national defense preparedness with attendant sacrifices, scarcities and higher taxes . . . For the telephone industry, the future presents picture calling for careful planning to meet problems that will arise.

By ROLAND DAVIES and FRED HENCK

THE FAST development of the Korean situation, bringing the good news of the Reds in retreat back of the 38th parallel has cheered the home front. However, Washington mobilization leaders, sense the complacency settling into the thinking of the public and sifting through to Congressmen now stumping their districts. The leaders have sounded the warning note that the road ahead calls for greater *national defense preparedness* with the attendant *sacrifices of scarcities and higher taxes.*

However, out of the welter of confusion which greeted the formation of new defense organizations in the government there have come successively greater uniformity and balance in decisions. Representative of this improvement is the new order on military priorities and allocations of critical and strategic materials which has been issued by the National Production Authority.

For the telephone industry, the future presents a picture calling for the most careful planning and preparedness to meet the problems that will arise on matters of manpower, equipment and rates—the latter to be particularly knotty in view of the increased taxes approved by Congress and those in the making.

In manpower, the squeeze is expected to be felt very soon. The draft is to continue and in the first new major step in calling young men to the service the Army will take 300,000 while the Navy plans to bring back into service about 15,000 officers. Such a demand from the Navy will require that a large number of enlisted reservists go back into the service, possibly 100,000 or more.

With the drive on for specialists in the services—and communications and electronics personnel rank in top levels of importance—the telephone companies, both Independent and Bell Systems, are expected to feel the pinch, particularly in young men who have received special training and have started their climb up the promotion ladders.

Further on the manpower side, the telephone companies will face the heavy competition of major manufacturing defense industries, with their top priorities, in organizing working forces.

Added to this will be the wage increases which will be sought in the telephone industry. The bell has already been sounded on that. The Communications Workers of America (CIO) has revealed that it has made up directives to its Divisions to seek reopening of working agreements to gain wage increases. The union points to the increased cost of living and has advanced the thought that pay boosts will help stop the "quit rate" in the industry. The CWA, like other unions in the CIO, has followed in the path of the Steel Workers who have already gained a voluntary boost from the Aluminum Corp. of America and who have asked that wage discussions with the steel industry take place some time before the termination date—in late November—of their present contracts.

In the mushrooming of increased wages in heavy industry, which is expected to follow naturally in the path of competition of manpower, prices will necessarily go up, economic experts point out, and to the telephone industry this will mean increased costs of materials. Tied in with scarcities and priorities, the increased materials' costs present a most difficult problem for telephone companies.

On taxes, the pinch is already being felt since levies on income are such an important factor in any consideration of future construction. In what may be the first request of a telephone company to seek recognition from a state regulatory agency of the impact of the new boost in corporation income taxes, the Pacific Telephone & Telegraph Co. has petitioned the California Public Utilities Commission to add another $6 million to its pending rate increase application. Among principal reasons cited why the company seeks

(*Please turn to page* 63)

Coming Conventions

North Carolina Independent Telephone Association, Carolina Inn, Pinehurst, Oct. 16-17.

South Dakota Telephone Association, Cataract Hotel, Sioux Falls, Oct. 26-27.

Virginia Independent Telephone Association, Natural Bridge Hotel, Natural Bridge, Va., Nov. 2-3.

South Carolina Independent Telephone Association. Wade Hampton Hotel, Columbia, Nov. 6-7.

Georgia Telephone Association, Dempsey Hotel, Macon, Nov. 9 *and* 10.

Florida Telephone Association, Sheraton Plaza Hotel, Daytona Beach, Nov. 13-14.

Alabama Telephone Association, Jefferson Davis Hotel, Montgomery, Nov. 16-17.

Missouri Telephone Association, Muehlebach Hotel, Kansas City, Nov. 20-21.

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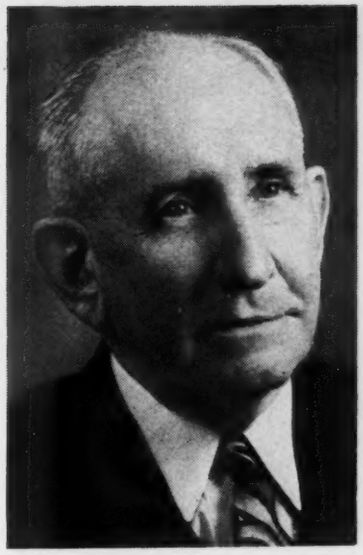
New USITA Pres. Ray Dalton, vice pres. and general mgr., West Coast Telephone Co., Everett Wash., has a long record of accomplishment in the Independent field.



R. B. Still, president of the Illinois Telephone Co., Bloomington, and veteran telephone operating executive was named USITA first vice president during the recent USITA convention.

Edwin M. Blakeslee, president of the Associated Telephone Co., Ltd., Santa Monica, Calif., is the new USITA second vice president. Mr. Blakeslee has long served the industry as Chairman of the USITA Toll Compensation & Settlements Committee.

USITA 53rd Annual Convention Sets New Record of Accomplishment

By John G. Reynolds

Managing Editor,
Telephone Engineer Publishing Corp.,
Chicago, Ill.

THERE WAS much looking ahead, planning ahead and organizing for the future during the 53rd annual Convention of the United States Independent Telephone Association at the Hotel Stevens, Chicago, October 9, 10 and 11. Of course there was some looking back at the past but to this writer the convention was a meeting of representatives of an industry that was proud of its glorious accomplishments but resolved to march ahead to even greater accomplishments in the future. From the first speaker throughout the well-presented program it was plainly evident to the listener and onlooker that there is a long and successful road ahead in Independent telephony. There may be rough spots. There may be troubles. But the Independents are used to surmounting rough spots and troubles. At their convention they looked back at the past with a deep sense of satisfaction of having done a job in the American way—individual initiative and individual accomplishment—and a firm realization that if the industry did not have any new problems in front of it and new things to solve the enjoyment of the future would not compete with the enjoyment of the past.

USITA president *Harold Bozell* enthusiastically faced the future with his audience at the first general convention session on October 10 and in an inspiring address that we are printing in full in this issue told his listeners—"Unless America is remade into something to which it has now no semblance and in a way in which we cannot imagine it seems to me that there is a long and successful road ahead in Independent telephony." There were few if any listeners to Mr. Bozell's address who did not feel at the conclusion of his remarks that "it is not a stretch of the imagination to say that there will be twenty million or more Independent telephones in service a quarter of a century hence and the industry will be doing things we don't even dream of now . . ."

Expansion of that thought was contained in the excellent address made by *Frank E. Bohn*, board chairman of the Home Telephone and Telegraph Co., Fort Wayne, Ind., at the opening session of the USITA Convention. To the conventioners who attended the meeting the address of Frank Bohn will long be remembered as one of the most stirring, thought provoking and inspiring addresses ever presented at a national telephone convention. None of his listeners will ever forget Mr. Bohn's admirable story of the Detroit Tiger's great Moriarity who stole home from third base to win a crucial game for his team. For several minutes, Mr. Bohn held his audience with his tale of an incident that was more than just a story. It became real as Mr. Bohn recited it: became so real the listener could sense the feeling in the grandstand. the working of Moriarity's mind, the tenseness of the players, the waiting for the pitcher to release the ball, and finally the feeling of satisfaction over Moriarity's successful trip from third with the winning run.

I doubt if any of the convention group will forget Mr. Bohn's story. Nor will they forget his inspired plea —"Don't die on third. Get home! Get home!"—and regard it as a graphic simile of the importance of immediate, result producing action to combat the socialistic trends of the Federal government before we all die on third, far from the home plate with the beneficial free enterprise system that has made American great lost in the mire of socialism.

There were warnings throughout Mr. Bohn's address that deserve wide circulation and the immediate atten-

tion of all citizens, and the urgency of such warnings was heard in addresses of other speakers at the USITA convention.

James F. Oates, Jr., chairman of the Peoples Gas Light & Coke Co., Chicago, minced no words as he stated in the concluding portion of his address—"If free enterprise succeeds in operating efficiently and acceptably the public utilities of our nation, the vast unregulated industry which has made America great is safe from the successful enroachment of collectivism." You'll find an abstract of Mr. Oates remarks in one of our October issues. The summary deserves your careful reading.

Approximately 2,200 Independent telephone men and women attended the three-day convention. The day-long Plant Conference on October 9 received high praise from the conference audience and the constructive program sponsored by the Plant Committee under the chairmanship of *W. M. Driggs* of the Illinois Telephone Co., Bloomington, Ill., certainly deserves the highest commendation of the entire telephone industry. The Plant Committee has tackled a huge job that is bound to be most beneficial. The day-long discussion of plant subjects presented by the Chairmen of the various Plant Subcommittees laid a firm foundation for the success of the committee's various projects. Elsewhere in this issue we are printing summarizations of papers presented at the conference. Each of the papers is important and if you do not have complete copies we suggest that you endeavor to obtain copies from the USITA office in Washington.

The new USITA president is *Ray Dalton*, vice president and general manager of the West Coast Telephone Co., Everett, Washington, whose election as head of the national association is an honor well merited by Mr. Dalton's long and successful career in the Independent industry.

Frank E. Bohn, board chairman of the Home T&T Co., Fort Wayne, Ind., delivered an inspiring address to the USITA Convention.

R. B. Still, president of the Illinois Telephone Co., Bloomington, Ill., and a veteran Independent telephone man with a long record of using his experience, knowledge and abilities to aid the cause of Independent telephony, was named first vice president of USITA.

Edwin M. Blakeslee, president of the Associated Telephone Co., Ltd., Santa Monica, Calif., was named second vice president. Mr. Blakeslee is another veteran Independent telephone executive whose work has been of definite value to Independent operating companies. His outstanding accomplishments as Chairman of the Toll Compensation & Settlements Committee have made him one of the industry's most popular members and his election to the post of second vice president is an honor that was well-earned by his consistently successful work.

USITA Executive Vice President Clyde S. Bailey, Washington, D. C., was elected for his 10th successive term. Mr. Bailey has established many new records of achievement and performance since becoming executive vice president of USITA and his constant alertness to problems of the Independent industry make his reappointment to this top USITA post popular with members of the industry.

New USITA secretary is *Stewart Collins*, Washington, D. C. Mr. Collins joined the USITA Washington office in January of this year. Prior to joining USITA, Mr. Collins was with the Arthur Andersen & Co.

The appointment of Mr. Collins as secretary allows *George C. Richert* to return to his original post as USITA Engineer and he was reelected assistant treasurer. USITA President *Harold Bozell* paid Mr. Richert a high tribute on his successful handling of the secretary's duties and expressed his admiration of Mr. Richert's constant record of accomplishment since joining the USITA Washington staff.

Carl D. Brorein, president of the Peninsular Telephone Co., Tampa, Fla., long time Independent operating executive and popular USITA officer, was reelected treasurer.

New USITA directors are *Burton W. Saunders*, president of the Illinois Commercial Telephone Co., Springfield, Ill., and *Andrew J. Sordoni*, president of the Commonwealth Telephone Corp., Forty Fort, Pa. Mr. Saunders and Mr. Sordoni are well known and prominent leaders in the Independent operating industry. As directors of USITA they bring to their new posts a wealth of experience, knowledge and ability that will make them valuable members of the USITA Board.

A Report On Affairs In Washington

THE POPULAR and capable USITA executive vice president *Clyde S. Bailey* carried forward the general "look ahead" theme of the 1950 USITA convention during his address before the general session on Tuesday afternoon. Mr. Bailey paid tribute to the men and women engaged in the Independent telephone industry with his statement —"We in the telephone business may not be rich in dollars, we may not be rich in the material things of life, but we are rich in terms of a heritage of public service and of a spiritual awakening that comes from engagement in the magic art of speeding the messages of mankind . . . If not rich in dollars, ours is certainly an industry rich in experience, essential in the service it renders and endowed with a lusty physical, technical and intellectual vigor which has enabled the surmounting of the most unusual obstacles over the years."

In words that rightfully and truthfully outlined the ambition of every progressive telephone company, Mr. Bailey commented that the natural aspiration of any telephone company should be to provide a satisfactory grade of service to its public; to have the confidence of that public; to be on good terms with the regulatory authority of the state; to have

a body of rates just and reasonable to the public and the stockholders alike; to have satisfactory earnings so that it may have satisfactory credit to enable it to obtain new capital for expansion and service improvement; to get in enough revenue to enable it to pay reasonable dividends to its stockholders and just wages to its employees, and to continue doing these things down through the years as an essential part of the community in which it operates as an essential segment of the American economy.

In his accounting of specific matters which have been handled during the past year by the USITA, Mr. Bailey stated—"The most encouraging feature concerning which I can report at this time is that relating to the rate increase notice requirements of the Defense Production Act which became a part of the law of the land on September 8th.

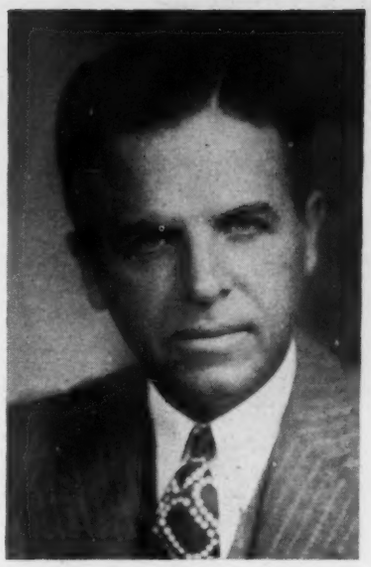
"Under a compromise worked out with, approved by the Conference Committee and reflected in the legislation as finally enacted, the only common carrier or other public utility that will be compelled to give notice to the President or his designee of a proposed rate increase during the present emergency is one selling property or service for 'resale to the public.' For the reason that telephone companies sell nothing 'for resale,' they are automatically exempted from the notice requirements."

Mr. Bailey commented that this should be reassuring to telephone companies that may find it necessary to increase rates during the current unpleasantness of war.

"Many were the headaches," he said, "suffered by individual companies during World War II as a result of having to give the President's designee, the O-P-A, 30 days' notice and to consent to the intervention by that agency in rate proceedings before state regulatory bodies."

Mr. Bailey said that during the past year the USITA has continued to urge a sound tax program. He commented that the outlook for any modification of telephone taxes is exceedingly dim at any foreseeable time in the future and that the same thing is doubtless true of corporate taxes.

Stating that perhaps the most immediately pressing matter pending before the F.C.C. together with the NARUC is one involving the ironing out of disparities between intra-state and interstate toll rates. Mr. Bailey recalled that the NARUC at one of its recent annual conventions adopted



USITA Executive Secretary Clyde S. Bailey, Washington, D. C. was reelected to serve his 10th consecutive term.

a resolution taking formal notice of these disparities.

"It has been stated that in their overall effect they involve more than $100,000,000," he said. "A technical staff committee of the NARUC special committee on telephone regulatory matters has been engaged in recent months in making a study of this subject. It will be reported upon at the NARUC Convention in Phoenix, Arizona to be held in November. In the conduct of the disparity studies the cooperation of the telephone industry has been invited. For the Independent branch of the industry the cooperation is being given through our Association's Toll Compensation Committee."

Mr. Bailey emphasized that many of the current industry problems are dollar problems.

"They stem," he said, "from low rate levels. Often a company is at fault for failing seasonably to apply for rates sufficient to produce earnings necessary to acquit its service obligations. But it is also true that a Commission is sometimes at fault for tolerating delays in the regulatory process."

He stressed that the duty of regulatory authority in the economic scheme of non-competition and regulated monopoly is to reach a decision with a minimum of delay, a decision based upon judgment predicated only on the facts presented and unrestrained by any considerations except those calculated to produce the fairest results today and tomorrow to the rate payor and investor alike. . . ."

Mr. Bailey commented that the regulatory commission is an important cog in the economy of regulated monopoly and no enlightened commissioner wants the present system superseded by substitutes which are being tried with questionable success by countries that don't begin to have the large telephone saturation, the high quality telephone service and the high standards of living otherwise enjoyed in the good old U. S. A.

The Impact Of Defense Preparations Upon Independent Telephone Companies

THE IMPACT of defense preparations upon Independent telephone companies was ably reviewed before the USITA Convention by Carl D. Brorein, chairman of the USITA National Defense Committee and president of the Peninsular Telephone Co., Tampa, Fla. Mr. Brorein presented a complete review of the developments in the National Defense Program in recent months.

"During the latter part of 1948," Mr. Brorein said, "the NSRB created two advisory committees in the communications field—a Manufacturing Advisory Committee and an Operating Advisory Committee. Both segments of our industry have representation on these committees. A meeting of the industry's Operating Advisory Committee was held in the offices of the NSRB in Washington during February of last year for the purpose of evaluating, on the basis of available information, production and service potentials in the event of a national emergency. Plans were also formulated whereby the Communications Division of NSRB would be kept more currently informed, as conditions warranted, with respect to the plant facilities, and especially toll line facilities, of communications companies operating in areas considered important for defense purposes. Under the plan, several of the major Independent companies have submitted to the NSRB information as to—(1) The location of their exchanges, the number of stations in service and the capacity of such exchanges, and (2)

The location and capacity of their toll line facilities."

Mr. Brorein commented that in view of the continued movement of industry into rural areas served by our branch of the telephone industry, it might reasonably be expected that requests for similar information will be made in an increasing number, of Independent telephone companies.

"The large portion of the mobilization planning program," he said is presently being carried out by various departments and agencies of the government with NSRB guidance and coordination. Mobilization planning, however, is not just an NSRB job 'formed out' to other agencies. It is the job of NSRB to play the role of coordinator, so that planning projects, worked in collaboration with participating agencies, can be carried forward in the interest of national sucurity objectives with unified overall direction. It is a responsibility which the agencies have been called upon by Congress and the President to share—with NSRB being a focal point for guidance and coordination."

Mr. Brorein explained that coordination of planning within each of the major areas, such as, production, materials, manpower, communications, transportation, etc., is the responsibility of the various NSRB planning offices.

Convention Photos

Photos on the opposite page were taken by the* TE&M *Camera during the* USITA *Convention. The November 1 issue of* FORTNIGHTLY TELEPHONE ENGINEER *will feature many additional convention photos.

"We have been informed, he said. "by the NSRB that plans developed for determining the feasibility of estimated military requirements of selected military items in terms of our resources available to meet them have been tested. Among the fields in which such tests have been made are steel, copper, aluminum, petroleum, merchant shipping, construction, and 240 selected key items of military equipment. It is expected that, as a result of such tests, the capacity of our national economy to meet wartime military and civilian war-supporting needs can be determined and properly balanced on a continuing basis.

"The NSRB was largely instrumental in drafting the Defense Production Act which became a part of the law of the land on September 8.

Carl D. Brorein, Tampa, Fla., serves USITA as secretary and chairman of the USITA National Defense Committee.

Almost immediately following his approval of the Act, President Truman issued several executive orders delegating certain functions to various government agencies. In accordance with the delegations contained in Executive Order 10161, dated September 9, the Department of Commerce was given the responsibility of dealing with priority, allocation and requisitioning with respect to communications and other matters not expressly delegated to other agencies. Secretary of Commerce Sawyer accordingly issued an order effective September 11, establishing within the Department of Commerce a National Production Authority."

Mr. Brorein emphasized that the subject of civilian defense is receiving a great deal of attention at the present time, not only at the national level but also at the state and community levels.

"It is our understanding," he said, "that we will shortly see the appointment of a Director of Civilian Defense at the national level so that efforts which are being made throughout the nation may be coordinated, related and, as far as may be required, standardized. Some Independent telephone companies, particularly those serving in important defense areas, have already been contacted by local officials responsible for setting up civilian defense communications systems. In all probability, most, if not all of the Independent telephone companies in the country, will be called upon to furnish facilities to be integrated into the National Communications Air Raid Warning Network.

"As Chairman of our Association's National Defense Committee, I assure you that the members of this Committee realize the importance of the duties and responsibilities assigned to them. The members of the Committee were appointed from various sections of the nation so that there would be nation-wide representation. The committee is composed of the following men: Frank S. Barnes of South Carolina; Ray Dalton, Washington State; Alden L. Hart, Kansas; L. W. Hill, North Carolina; R. A. Lumpkin, Illinois; L. F. Sheperd, Pennsylvania; Rupert E. Schotts, Chicago; Col. W. C. Henry, Ohio, and myself, from Florida."

"This committee, and these men, along with many others, and the Washington Association Staff, are keeping in close touch with defense activities, both military and civilian, and will continue to do so to the end that our industry may serve fully the needs and requirements of the nation."

One Year Under The REA Telephone Loan Program

CLAUDE R. WICKARD, administrator, of the Rural Electrification Administration, told the USITA Convention that as of October 6, the REA had received 584 applications for telephone loans. Four hundred five came from commercial enterprises, and 169 were from mutuals, cooperatives and other types of non-profit systems. Ten did not designate the type of ownership involved. As of the same date, 34 loan allocations, totalling $7,901,500, had been made to applicants in 21 States.

"These loan allocations," he said, "have as their purpose the extension of service to 19,279 new subscribers and substantially improving service for 16,447 present subscribers. Twenty-six of the allocations were made to commercial companies. The remaining eight were to cooperatives and mutuals. Four loan contracts have been signed. The first was with the Fredericksburg & Wild-

erness Telephone Co., Chancellor, Va. Changeover of the first full section of this company's system to modern dial equipment was marked by a ceremony on September 20.

"We have formally rejected one application. That was done because feasibility could not be demonstrated to our satisfaction. Consideration of four other applications has been suspended because of the applicant's inability or reluctance to meet one or another of the requirements of the Act. Twenty-seven applications have been withdrawn for a variety of reasons. Most of them were from people operating very small facilities. One had only 12 subscribers.

"That leaves 518 applications that are at present under consideration. On 239 of these, field studies have been made, and consideration of the applications is well advanced. Ninety-one are now ready to be scheduled for field study. On 157 applications, we are awaiting replies from applicants who have been notified of our need for further information before field studies can be made. That leaves only 31 cases in which the applicant has had no word from us beyond acknowledgement of the application. These are applications that have been received most recently."

Commenting that there have been fears expressed that REA was going to finance the duplication of existing facilities, Mr. Wickard said the agency will continue to consientiously avoid the duplication of any facilities which are furnishing adequate service. "It would," he said, "be uneconomical as well as unfair for us to make such a loan. I believe that close examination of the past year's performance will bear out my statement that we have no such intention.

"Your President, Mr. Bozell, and your Executive Vice President, Mr. Bailey, and many others, have made inquiry as to whether there would not be some change in policy or procedure after October 28 of this year. The first year has even been called the 'grace' period. I have repeatedly made statements to your officials and other people that we could not foresee any change occurring on or after October 28 so far as our relationships with existing companies are concerned.

"We plan to continue our practice generally of considering applications in the order in which they are received. This means that applications received before this coming October 28 will be disposed of before those received after that date. Moreover, let me call your attention to the fact that the law provides, in addition to the special one-year priority, a continuing preference for existing companies, along with cooperatives. That preference is not limited to one year nor to any specific period but continues through the life of the program. The Congress, in its discussions and reports on the legislation, indicated that it intended existing companies to be given every reasonable opportunity to utilize the program wherever they can and will. Where they do not, the Congress indicated that rural people should be given the opportunity to get telephone service by forming new organizations. Our intention is to administer the program in accordance with both the letter and the spirit of the law.

"Even beyond that, there are practical reasons why we want to continue to work with existing companies. In fact, one reason I am glad to be here today is that it gives me the opportunity to solicit the support and cooperation of existing companies. There is some kind of existing telephone service in most rural areas in this country. In most cases the most economical and the most satisfactory procedure would be to use these existing facilities as a nucleus for expanding and improving telephone service in the area. A single system can operate more efficiently and more economically than can two or more systems in the same rural area. Then, when you have two companies, there is always the problem of working out agreements so that subscribers of each can talk to each other. Almost invariably the existing company is now serving the area offering the best return and if that area can be combined with the unserved, less economical area, there is a better opportunity for low-cost service. This combination, or merging, of the unserved with the served may well spell the difference as to whether a feasible loan can be made.

Claude R. Wickard, administrator of the Rural Electrification Administration.

R. A. Lumpkin Elected President of Pioneers

R. A. LUMPKIN, president of the Illinois Consolidated Telephone Co., Mattoon, Illinois was elected president of the Independent Telephone Pioneer Association at the group's annual meeting during the USITA Convention on October 10. Merle M. Hale, general commercial superintendent of the Lincoln (Neb.) Telephone & Telegraph Co. was named first vice president and Verne Chaney, Chicago, Ill., was re-elected second vice president.

Directors elected for three-year terms were: Carl D. Brorein, Tampa, Fla.; Mr. Chaney; Mr. Hale; J. I. Kennedy, Freeport, Ill.; Mr. Lumpkin; F. M. Parsons, Chicago; Ray W. Smith, Chicago, Ill.; Mrs. Mayme Workman, Springfield, Ill. and Katharine Bauer, Jefferson City, Mo.

Mrs. Workman was re-elected executive secretary and J. K. Johnston, Indianapolis, Ind. was named to the post of secretary.

Convention Photos

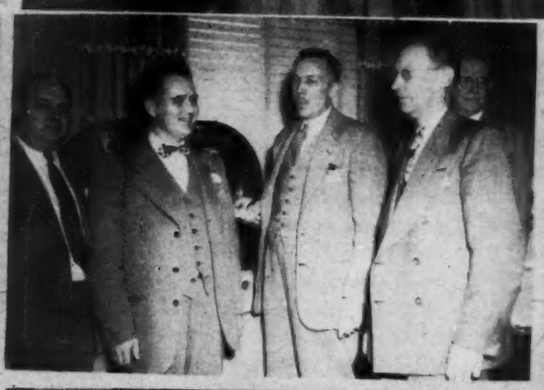
Photos on the opposite page were taken by the* TE&M *Camera during the* USITA *Convention. The November 1 issue of* FORTNIGHTLY TELEPHONE ENGINEER *will feature many additional convention photos.

"You may be interested in knowing if you do not already know, that when we receive letters from rural people —and we have received thousands of them—inquiring as to how they should go about getting telephone service, we first suggest that they confer with the officials of the existing telephone company in the area, if they have not already done so.

"I hope what I have said here today, as well as what we have done during the past year, will dispel any fears that you may have that we have any intention of driving existing telephone companies out of business. I believe that if you will examine the REA record in the field of rural electrification, you will find that we have not put anybody out of business but that, on the other hand, our operation has been of distinct benefit to the power industry of the country. I will give you one figure. During the last ten years our borrowers have increased their annual purchases of electricity from the commercial

(Please turn to page 56)

TELEPHONE PRODUCTS



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What Is Ahead In Independent Telephony?

By Harold V. Bozell

USITA President, and President of General Telephone Corp., New York City

HE WOULD BE a seer indeed who could predict with any certainty all that is ahead in Independent telephony. But there is one sure prediction I think anyone would be safe in making that is that when, 20 or 25 years from now, an appraisal is made the conclusion will surely be that Independent telephony has continued, as it has been called, the largest small business in the United States and will have shown a continued record of performance of ever expanding and ever improving telephone service to its segment of the American population.

That there are problems ahead to meet and solve in order that such a record will surely take place is, of course, recognized by all of us. Today some of those problems loom large, some of them of a different nature than we have ever had to meet before, but I venture to state that, relatively, they are no more serious than some of the problems this industry has well met and solved in previous decades.

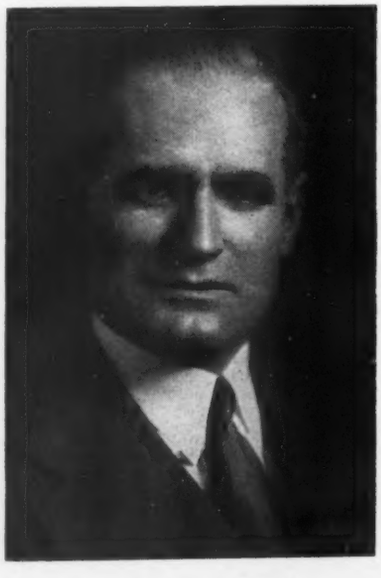
I would like to discuss a few of the things that we see ahead, and I think they fall into two general classes —some of them are general and common to all business in this ever and seemingly somewhat rapidly changing social structure, and some of them are peculiar to our own individual business.

One of the first and foremost matters that confronts us is the increasing encroachment of Federal jurisdiction and Federal interference, both direct and indirect, upon businesses of all kinds, as compared to state and local influence which is more sympathetically based on closer and more intimate knowledge of local affairs. It still seems unfathomable why any individual born and raised and doing business in any state in the Union seems to change when he comes under the Washington influence and becomes sympathetic to, if not an advocate of, greater centralization of authority, domination and interference with reference to affairs and business even back in his own home state. If the trend continues, it will have an increasingly important influence upon all our business and will affect the atmosphere in which we operate. It affects our economy, it tends to dull initiative. I think it is not being reactionary, but rather liberal, to suggest that one of our nation-wide problems is to try to shift the trend back in the other direction to increase local responsibility and, therefore, initiative, which is what has brought this country to its present high state of development—unequalled in the world.

The national picture, both so far as economy and control go, is largely affected at the present time by the Korean and other international affairs, and it appears that there are many who would not be unwilling to use or see used this current situation still further to centralize matters in Washington.

Current Developments

SPEAKING specifically of some of these current developments resulting from the Korean affair, the new National Production Authority with a system of priorities which appear to be needed and, on the financial side, increased taxation and the proposed so-called excess profits tax, are two of the most serious and important. We do not yet know what the program of priorities will mean to business in general or to our own telephone business. But I sincerely believe that if the national program makes it necessary to operate under a wide system of priorities as in World War II, the experience gained in that war and the character of administrative ability that seems to be going to handle the problems this time should give some measure of comfort. And from what contact I personally have had, I sense a feeling that the telephone indsutry, practically the nerve system of the nation, is so vital to any national program that it will not be denied what is essential for its continued efficient functioning.



HAROLD V. BOZELL

For one thing, as the country is confronted with this increasing nation-wide emergency or activity, it finds a telephone communication system expanded far beyond its status during World War II; there are more than fifty percent more telephones in service, there has been a large increase in the number of communication channels, and there has been noted technical improvement in the way of more rapid service, so that the industry can handle, with its present plant, tremendous communication demands.

On the other hand, we must not shut our eyes to the fact that, as compared with the situation at the beginning of World War II, our plant does not have any slack but, in the reverse, is in general overloaded, when we consider the additional service demands that might be expected over and above the capacity of our present plant.

In these days of increasing dispersal of industry, we can expect larger and larger demands upon the independent segment of the telephone industry because of the very nature of its distribution throughout the United States. This dispersion had, of course, already started for economic reasons. But the current world situation has accelerated it from the standpoint of safety. As a matter of fact, one prominent eastern financial advisory concern measures the relative safety of some of the investments it recommends to its clients based upon what it says is "relative freedom of danger from atomic bombs."

These problems of growth in the territories of small companies or in the scattered territories of larger companies may sometimes loom large, but it seems to me the situation will present opportunity as well as questions of how to do the job,

both financially and technically. And I think the telephone managements will have both the courage, ability and imagination to capitalize on the opportunity and solve any corollary problem.

Taxation

ANOTHER matter I mentioned of national influence is increasing taxation and proposed excess profits taxes.

With reference to any straight increase in tax rates, the corporation always seems to be an easy target because to the legislator it is a politically safe and an easy tax collecting agency. But increasingly I think there is realization in Congress that the corporation is but a collection of individuals and that the corporate tax carries a certain amount of double taxation of earnings and that there is a limit to which it is wise to go. And speaking of increased taxation of our particular kind of business, it is of interest to note that in formal presentations before the House Ways and Means Committee and the Senate Finance Committee, the National Association of Railroad and Utilities Commissioners has formally stated that any increase in corporate taxes must be recognized as an increased expense upon regulated industry, which increased expense the regulatory commissions are forced to consider in determining rates which regulated industry can charge.

Increased corporate tax rates, of course, increase both the public relations and business problems of the utilities and the public relations and political problems of the commissions, but that should not affect the ultimate result as to which the National Association of Railroad and Utilities Commissioners has formally committed itself in its presentations to the Congress.

The excess profits tax presents a different problem. As you know from the newspapers, there has been a wide public clamor for skimming off war profits, to which proposal no one can object to the extent they actually occur. The solution of how to do it is complex and so recognized, but nevertheless there rests upon the financial committees of the Congress the obligation in the Revenue Act passed this year to present some form of what is generally called an excess profits tax. . . .

My personal opinion is that if any such tax is proposed—and I think it should be considered only in case we get into a much more general world-wide situation and, therefore, a national emergency or a larger program of national spending than now—the result will not be such as we had during World War II. I think it can be safely said that the Treasury Department, the Joint Committee on Internal Revenue, the Chairmen and the ranking members of the House Ways and Means Committee and the Senate Finance Committee do not favor an excess profits tax of the character we had during World War II or so far proposed at this time. The National Association of Railroad and Utilities Commissioners took a firm stand on this question in 1944 and has revived its deep interest with even greater emphasis today. The purpose of this group as I see it, is to present a program so that any excess profits tax so-called will not tax the earnings of regulated industry unless and until perchance in a few isolated or individual cases the particular utility has, due to war activities in its territory, a bulge in earnings above a fair return on its capital. As a matter of fact, I think this organization feels that any type of excess profits tax is unnecessary in regulated industry since the industry is so regulated that it does not have any excess earnings, and that any Federal tax law of the nature discussed practically, when applied to public utilities has the effect of destroying or at least neutralizing the state regulation of the earnings of those utilities. . . .

Fundamentally, it would be a national calamity to place such a tax upon regulated industry that its earnings would be so reduced that it could not attract the necessary capital to meet the tremendous demands for increased capacity in service upon which the very success of an accelerated national program and, therefore, the safety of the nation depends.

As we have increased national expenditures, we must have increased taxes, but I sincerely hope they will be constructively distributed so that they can be fairly carried.

Turning to the more specific problems of the telephone industry as affected by government activity or regulation, we have two things—first, the policy of government loans by the REA, and second, actions which would result in further encroachment on management.

As to the first, we in the independent side of the telephone industry probably meet this more than the Bell System because of our widely scattered geographical coverage in rural areas. The program is too young as yet to know what its ultimate effect may be, and we will hear from the Administrator of that program, Mr. Wickard, as to what he thinks about progress to date and further developments. I think the administration is finding that we know our business pretty well as to what both the problems and economics of rural service are and that it takes telephone know-how and adequate rates, as well as the money for capital investment, to render rural telephone service.

There are two current examples of the second point I mentioned, namely, either actual or prospective encroachment on managerial functions. The first of these is the increasing tendency of the Federal Communications Commission to permit itself to be used as a forum for the manufacturer who develops some new gadget he wants the telephone companies or the public to use as an adjunct to telephone service. The voice recorder was one case in point, but the problem there was essentially, since it was going to be used by subscribers, that it should be used under certain safeguarding conditions.

Currently there are two questions before the Federal Communications Commission which it seem to me are of a different nature. These are the Hush-a-Phone and the answering device proceedings. As to the latter, three manufacturers of so-called answering devices, that is, devices which respond to the telephone and give the caller a message that the called party is not at home and telling where he can be reached or that a message can be recorded, have petitioned the Federal Communications Commission that the telephone companies revise their tariffs to permit the attachment of such devices.

There is a fourth and I believe older manufacturer of such a device who has not become a party to the proceeding, but who believes that the telephone company itself, if such service is to be rendered, should own

(*Please turn to page* 57)

USITA Executive Committee 1950-1951

HEADED BY Ray Dalton, Everett, Wash., new USITA president, as Chairman, the USITA Executive Committee for 1950-1951 consists of the following members: Harold Bozell, New York City; Frank Bohn, Fort Wayne, Ind.; Carl Brorein, Tampa, Fla.; Foster McHenry, Jefferson City, Mo.; W. C. Henry, Bellevue, Ohio; Judson Large, Chicago; C. D. Manning, Chicago; Warren B. Clay, Hutchison, Minn.; R. A. Lumpkin, Mattoon, Ill. and Roy W. Siemund, Chicago

USITA Plant Conference Performs Valuable Task For Industry

W. M. DRIGGS, Bloomington, Ill., chairman of the USITA Plant Committee, presided at the Plant Conference on Monday, October 9 and presented an outstanding program that was aimed and designed by members of the Plant Committee to benefit the majority of the Independent companies. The 1950 meeting was a new and different type of conference which represented a definite forward step in the Plant Committee's plan to take a more active approach to current plant problems and new developments.

In his report on Plant Committee activities, Mr. Driggs stated that the aim of the committee is to establish an Association-wide research program in which the young, as well as the seasoned telephone men of the USITA may have the opportunity to participate.

"We have," he said, "set our sights on a target which is well within our reach, provided we take advantage of the wealth of material that is available within the membership of the USITA."

Mr. Driggs pointed out that the program of the Plant Committee covers a wide range of plant subjects and should include as consultants, representatives from small and large companies alike from all sections of the country. To adequately cover the plant subjects, sub-committees have been designated with members of the Plant Committee appointed as directors of the sub-committees.

He explained that the sub-committees prepared the Conference program and each director would present a paper coverng his respective subject.

"In addition," he said, "to the paper given today, detailed scripts with appropriate exhibits and drawings have been prepared for distribution. It is hoped that these papers will prove to be of value to you and that you will use them for whatever they are worth in starting a library in your company. It is our recommendation that this plan be followed annually and in that event subjects will be chosen which can be added to the previous year's papers. It is also our hope that in future years these can be bound in booklet form."

Mr. Driggs explained that during the past year the Plant Committee received numerous inuqiries concerning the placing of buried cable in a peat bog, the use of a cable splicing machine, the joint use of poles and types of joint use agreements, intertoll dialing problems, automatic timing devices and other matters.

W. M. Driggs, Bloomington, Ill., is chairman of the USITA Plant Committee.

"Under our present plan," he said, "these inquiries are referred to the director of the subcommittee dealing with the phase of plant operation involved. In many instances the views of the other members of the committee are also obtained. In this way the Committee can obtain the benefit of the knowledge and experience of Independent plant men from all sections of the country who are qualified to advise with respect to common problems with which Independent companies, regardless of size, might be confronted."

Discussing other activities of the Plant Committee, Mr. Driggs stated the group assists the Washington office of USITA and coordinates its plans with those of other committees. He explained that through conferences with the REA Standards Division when it was planning to prepare specifications for rural telephone plant, an agreement was reached whereby the USITA and the manufacturers would independently examine the proposed specifications and submit comments and suggestions for consideration by the REA Standards people prior to the issuance of the specifications.

Mr. Driggs paid tribute to the many Independent telephone men who contributed their time and experience to aid the Plant Committee's projects. In closing, he stated—"Your Plant Committee stands ready to be of such assistance as it can to those who call upon it for advice," and urged telephone companies to make inquiries and offer suggestions which might benefit plant activities.

Washington Affairs

GEORGE C. RICHERT, USITA secretary, presented an impressive report to the Plant Conference on the participation of the Plant Committee in Washington affairs.

Mr. Richert stated that the matter of standardization of equipment and material to be used on REA financed rural telephone systems and the development of procedures required to implement a program undertaken for that purpose is looming large on the horizon at the Rural Electrification Administration.

"The REA Standards Division," he said, "has furnished the Association with copies of the following proposed specifications which it has prepared thus far: Proposed Specification—Dial Equipment for Central Offices up to 500 Lines; Proposed Specification for Telephone Sets; Proposed Specification for Telephone Station Protectors, and Proposed Specification for Telephone Drop Wire."

According to Mr. Richert, the Association's comments relating to three of the proposed specifications were approved by Chairman Henry of the Committee on Problems of Small Companies and Plant Committee Chairman Driggs and have been submitted to the REA. These comments were approved after consideration of the views and suggestions offered by the members of the Committee on Problems of Small Companies and the Plant Committee as well as the appropriate Plant subcommittee members to whom a copy of each of the proposed specifications was furnished. On this basis the views of qualified Independent telephone operating and manufacturing men from various sections of the country are made available for consideration by the REA Standards people.

"The REA," he said, "has revised its proposed specification for dial equipment for central offices after consideration of the comments submitted. Under the procedure outlined our Association will offer such comments and suggestions as it might have with respect to these revisions. We have been informed that further revision of these specifications will, in all probability, be made as experi-

ence is obtained as a result of their application.

"The REA Standards people have expressed their appreciation for our cooperation in this activity which follows to a large extent along the lines of a similar program designed to effect maximum standardization of REA financed rural electric systems."

Mr. Richert commented that the subject of standardization is one to which the REA has given a great deal of attention.

"Former REA Administrator Slattery," he said, "considered standardization as one of the most effective means whereby costs and rates could be reduced to the extent necessary to assure success of the rural electrification program. He subscribed to the opinion of the REA engineering staff that the so-called 'battleship construction' practices followed by private electric companies in building rural line facilities were unwarranted and resulted in unnecessarily increased costs.

"In support of the position of the REA in this respect Mr. O'Brien has also cited to us instances in which substantial reductions in REA electrical equipment and material costs have been brought about as a result of standardization of purchasing procedures and construction methods and practices.

"We have been informed that REA electric line costs were reduced substantially and transformer capacity and costs and meter costs have also been lowered without any adverse effect upon the service life of facilities or service quality. It has also been stated that in some instances REA overall construction costs have been reduced by as much as two-thirds.

"It appears to be the view of the Rural Electrification Administration that standardization has contributed to an appreciable extent to the success which has attended the efforts of this agency of the Federal Government to make electric service available to an increasing number of families.

"Whether there is justification for the entertainment of a similar view with respect to the economic feasability of standardization in the Independent telephone field remains to be demonstrated. It is recognized by the industry that economic as well as other factors involved in telephone operations must be given proper consideration. This comment is made, having in mind, for example, the fact that telephone switchboards are tailor-made to meet the requirements of the particular communities for which they are designed. Traffic requirements of different communities vary

George C. Richert, Washington, D. C., serves the Independent Industry as USITA Engineer.

to a considerable extent because of the differences in the nature and volume and many other characteristics of the traffic factors which must be taken into account. Although standardization of some switchboard components is possible, there is reason to believe that this type of equipment will not readily lend itself to assembly line production methods."

Mr. Richert commended the Plant Committee for its cooperation with the Washington staff in matters in which it has been engaged in the interest of assisting member companies in the solution of common problems during the past year.

Improvements in Pole Line And Conduit Construction

A. A. WILSON of the Illinois Consolidated Telephone Co., Mattoon, Ill., during his discussion of "Improvements In Pole Line and Conduit Construction," outlined a method which is being used by a number of utility companies for prolonging the life of the cedar poles after they have been in place for a number of years.

"This method," he said, "involves the use of a wood preserving chemical and a saturated felt bandage, similar to a roofing felt, applied at the ground line of the cedar poles. There are some wood preserving companies who contract for treatment of poles with their products and with their own workmen. It is also possible for utility companies to purchase the materials only and perform the work with their own forces. The treatment procedure is simple and can easily be performed with temporary labor operating under one man who is generally familiar with pole work. Specific instructions are furnished by the supplier of the treating materials."

Mr. Wilson suggested that as a general guide, poles with no original treatment should be treated immediately. Poles which had butt dipped treatment only should be treated 5 years after installation. Poles with butt dipped incised treatment should be treated 18 years after installation. The method of treating the poles is to dig out around the hole to a depth of about 17 inches and carefully wire brush and clean away all decayed wood. General decay is removed with a sharpened spade, finishing with a hatchet to pencil off the overhang. Sound the pole for heart rot and bore if necessary.

"The boring," he said, "should be filled with a treated plug. The circumference of the pole at the ground line is then measured and checked against minimum requirements. If the pole is found sound and of sufficient size the treatment is applied. The chemical is applied to the pole from 3 inches above the ground to 15 inches below. A felt bandage, similar to a roofing felt is then wrapped around the pole over the chemical treatment and the hole is refilled. The purpose of this bandage is to prevent the chemicals leaching into the surrounding ground."

Mr. Wilson also discussed proper tools and equipment for constructing pole lines and stated that the development of the comparatively low cost digging machines for digging pole holes is one of the most important items.

"Construction trucks," he said, "provided with winch and derricks have also been found to be a necessity where a large amount of pole line construction is required. Most construction trucks are provided with the derrick mounted at the rear of the truck. However, some companies have found that the derrick mounted on the front of the truck has proved more satisfactory for their purposes. This derrick is mounted on a special framework in place of the front bumper. The winch is located in the usual place behind the truck cab."

Following his presentation of various fundamentals of pole line and underground conduit construction, Mr. Wilson stated that it is the plan of the Subcommittee on Pole Lines and Conduit to keep abreast of improvements and advancement in the art in connection with these subjects and the Subcommittee will welcome

(Please turn to page 46)

THE LEICH *Dial System*

The Leich Dial System was designed to provide a more practical dial switchboard for exchanges of moderate size.

Because it was designed for the smaller exchange operator, it offers many advantages not available in dial switchboards that have been scaled down to small size.

First of all, the Leich Dial System is a greatly simplified unit. It's easier to understand and operate. There are no moving mechanical parts to maintain or adjust. All operations are performed by full size, dependable relays. Any good switchboard man can learn the service routine.

Dependable operation for long periods without any attention other than a regular check-up is another advantage the Leich Dial System offers.

Installation of a Leich Dial System costs less and is done more quickly because all the parts are factory-tested and simply jacked-in to the framework at the exchange. A one hundred line board is usually completely installed and ready to cut over in from a week to ten days.

All the parts, including lines and links, can be jacked-in when additions are required. Your own switchboard man can add ten lines to a Leich Dial System in ten minutes. He can add an extra link (connecting circuit) in an hour or two, with no factory installer necessary. This means a considerable dollars and cents savings when adding capacity for the new subscribers who invariably sign up when an exchange is converted to dial.

Practically everything that would make it practical and possible for the small exchange to convert to dial is incorporated in the Leich Dial System. The small buildings on the opposite page are a few of the more than one hundred exchanges now operating Leich Dial Systems.

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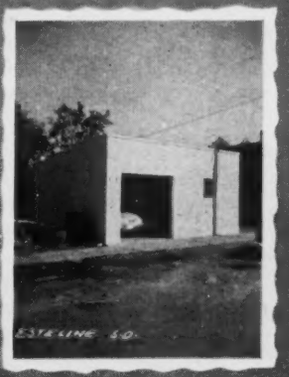

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MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

questions concerning these topics at any time.

With Mr. Wilson serving as director of the Subcommittee on Pole Lines and Conduit, the committee members are: Alto F. Bradner, The Orange City Telephone Co., Middletown, N. Y.; H. P. Siebken, Commonwealth Telephone Co., Madison, Wis.; H. B. Flower, Wood City Telephone Co., Wisconsin Rapids, Wis.; Dave Gardner, Nocona (Tex.) Telephone Co.; H. B. Statler, Community Telephone Co. of Wisconsin, Black River Falls, and Boyd B. Haney, Home Telephone & Telegraph Co., Fort Wayne, Ind.

Trends In Joint Pole Use

W. O. TRETTIN of the Illinois Commercial Telephone Co., Springfield, told the Plant Conference that the coordination of telephone circuits and power wire presents some additional problems which must be resolved before serious consideration can be given to large scale joint use with power companies.

"It is commonly believed," he said, "that joint use of poles subjects the telephone plant to fewer hazards because there are fewer cross-overs of wire plant and because it is more feasible to tie in the telephone protection grounding system with power grounds, thus providing a more positive action of the power circuit breakers when power wires contact the telephone plant.

"An important reason for undertaking joint use is the economic gain to both contracting parties and unless both parties find it more economical than to maintain separate pole lines, joint use will tend to be limited to situations where right of way difficulties or municipal regulations require it."

Mr. Trettin stated that the total economic gain or saving inherent in the building of one joint pole line instead of two separate pole lines should be equitably allocated between the two contracting parties.

"Power companies," he said, "generally contend that each of the contracting parties should bear equal cost amounts which is in effect saying that the first cost of a separate telephone pole line is the same as that of a separate power pole line and further that each party uses the same amount of space on a joint pole. It can be shown that the cost of a telephone pole line is less than that of a power pole line and further that less space is required for telephone attachments so that a telephone company has a strong case for expecting a power company to bear more than 50 percent of the cost of a joint pole line."

Mr. Trettin commented that on the average an equitable division of joint pole line cost would result in the telephone company bearing from 33 1/3 percent to 40 percent of the

W. O. Trettin, Springfield, Ill., is Director of USITA Subcommittee on Joint Pole Use.

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cost and the power company the remaining 66 2/3 to 60 percent.

In addition to Mr. Trettin, other members of the Subcommittee on Joint Pole Use are: E. L. Barnes, Rock Hill Telephone Co., Rock Hill, S. C.; Fox Henderson, Texas Telephone Co., Sherman, Texas; John J. Moran, Ohio Consolidated Tel. Co., Portsmouth, Ohio; T. A. Osborne, Associated Tel. Co., Ltd., Santa Monica, Calif.; Allen Ryder, Blue Mountain Tel. & Tel. Co., Bangor, Pa.; and H. P. Siebken, Commonwealth Telephone Co., Madison, Wis.

Open-Wire Transpositions

REPRESENTING the Subcommittee on Wire Plant, F. E. Behm of the Lincoln Telephone & Telegraph Co., Lincoln, Neb., discussed open wire transpositions and drop wire usage trends during the Plant Conference October 9. Stating that telephone open-wire circuits require transposing of the line conductors in accordance with a suitable transposition scheme for the purpose of preventing or at least reducing to a minimum, cross talk or inductive interference, Mr. Behm commented that "this suppression of the cross talk and noise is an important factor in maintaining the intelligibility of conversations carried over a telephone line."

Mr. Behm illustrated that since cross talk is due to the summation of the circulating currents set up by the voltage induced in each part of the circuit, the logical procedure for reducing crosstalk would be to arrange the conductors in such a manner as to cause the potentials induced in one part of the circuit to neutralize the potentials induced in another portion of the same circuit.

"The simplest way," he said, "of obtaining this result is to transpose the conductors in the center of the circuits; that is reverse the relative pin positions of the conductors at this point."

Through the use of drawings Mr. Behm illustrated various types of transpositions that were equally effective in reducing cross talk, resulting from either electromagnetic induction or electrostatic induction. His remarks made it evident that cross talk can be effectively reduced only by transposing the circuit at intervals along its length.

"Both the disturbed circuit and the disturbing circuit," he said, "should be transposed in such a manner that the transposition in one circuit falls between two transpositions of another circuit. The greater

(*Please turn to page* 50)

What Sort Of Heritage Are We Creating For Future Generations?

MOST OF US think of a heritage in terms of money or property—something material which we leave to our children or grandchildren so that they can have a better start and enjoy more of the comforts and conveniences of life than we did.

There is no assurance that such heritage will serve any purpose so long as its value is steadily being destroyed by excessive government spending—the chief cause of constantly increasing prices of the things we must buy. Remember this affects every dollar you set aside for the future, whether in the form of insurance, savings accounts or government bonds.

But there is one heritage which will not lose its value—so long as we can preserve it—Liberty and a free enterprise created by our Founding Fathers through the limitations of the powers of government.

How Would YOU Answer These Questions?

TO BRING this problem home ask yourself what you would say to your son in the years to come if he were to ask you what you did to preserve the freedoms which our forefathers created for us at such great sacrifice—what you did to reduce the mortgage on his future in the form of government debt and big government he must support—what you did to resist the adoption of schemes, under the guise of security, which lead to an increase in government rule over the lives of our people.

If we do not want to be faced with these questions, and others even more difficut, the time for action is NOW. It will take prompt and vigorous measures on the part of all thinking people to halt the dangers that confront us.

As Citizens We Have These Obligations

(1) Take a real and active interest in politics and government affairs.

(2) Keep ourselves thoroughly informed on proposed legislation, government plans and proposals and know their ultimate effect on our freedoms and national economy.

(3) Investigate the records of those who are candidates for office—regardless of political party—and find out whether they really believe in and stand for the things which have made America the greatest country on earth.

(4) Know how all other forms of government, called by a variety of names for the purpose of snaring votes, have failed to fulfill the promises made by their promoters.

(5) Realize the dangers to the people in the costly tendency of government to do many things for the people that they can do better themselves.

(6) Exert every effort at our command to force our public officials to reduce waste in government expenditures and to eliminate all non-essential expenditures.

(7) See that others are informed and that they appreciate their responsibility.

Never since Colonial times has government meant so much in the life of every person in America.

Never have the thinking people and people who are asking nothing from the government given as little time and thought to government affairs as today.

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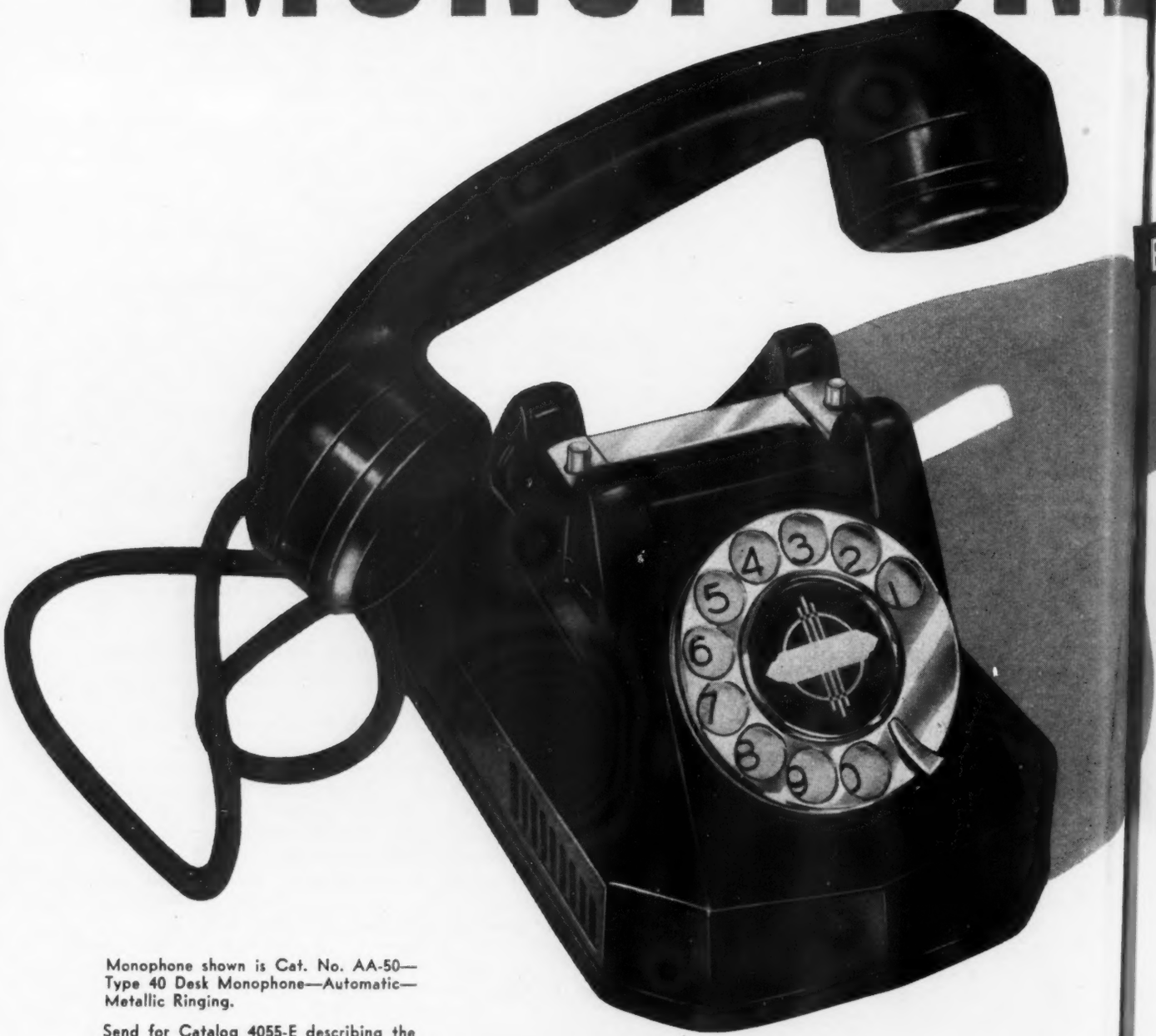

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1. You give your subscribers the benefit of the fine transmission provided by Automatic's all-positions transmitter, capsule receiver, and famous anti-sidetone circuit.
2. Your maintenance costs hit bottom—because Monophone parts are engineered to withstand wear, and "shock-proofed" against damage.
3. You get Automatic's famous "quieted-pawl" dial, which in accelerated laboratory tests has averaged more than 184 years of service!
4. You get the new chromium-plated lift bar, either as standard equipment with new Type 40 Monophones or available separately for installation on Type 40's already in service.

Once you install Monophones you'll know why so many Independent telephone companies always use Monophones. MONOPHONES GIVE YOU MORE of the features you need!

LEFT: T. S. Gary, Chicago, R. A. Lumpkin, Mattoon, Illinois, new president of the Independent Telephone Pioneer Association, R. E. Shotts, Chicago and Roy Autry, Dallas, rest between sessions. . . . CENTER: USITA Vice President C. S. Bailey (left) and retiring USITA President H. V. Bozell (right) pose with Ray Dalton, newly elected president of USITA. . . . RIGHT: Independent Pioneers, V. P. Verne Chaney, Chicago, Sec. Mayme Workman and retiring President J. I. Kennedy, Freeport, Ill. presided at the Pioneer annual session.

the number of transpositions, the better the cross talk balance."

Stating that in actual practice many open wire leads carry more than two paralleling circuits, Mr. Behm emphasized that the cross talk problem becomes more complicated because of the possibility of cross talk induction from one circuit affecting several circuits in varying degrees. Circuits on one crossarm of wires may also cross talk into circuits on other crossarms of the same lead.

"This problem," he said, "is solved by working out a standard transposition scheme that calls for placing a certain number of transpositions in each circuit with the transpositions so located as to be most effective in reducing cross talk induction between adjacent circuits, as well as other circuits farther apart. Such schemes call for transposition points at 1/4 mile intervals."

Mr. Behm added that transposition schemes for important open-wire lines are designed for section lengths from several hundred feet up to eight miles, each section being carefully balanced for cross talk in so far as possible. In more complicated arrangements, where perfect balance must be maintained, sections of varying lengths are fitted together, each being completely balanced within itself. This non-uniformity of section lengths is made necessary by the need for placing line branch-offs or circuit terminations, or additions, at the junctions between these sections, so that the cross talk balance will not be upset.

Mr. Behm explained that the transposing of telephone open-wire circuits, in accordance with a standard scheme will not be fully effective in reducing cross talk, if care is not taken to keep the circuits balanced in other respects. The line will be unbalanced if the resistance of the two conductors of the circuit are not equal, or if one side of the line has a higher leakage resistance than the other.

Convention Photos

The above photos were taken by the* TE&M *Camera during the* USITA *Convention. The November 1 issue of* FORTNIGHTLY TELEPHONE ENGINEER *will feature many additional Convention photographs.

"Unequal conductor resistances," he said, "are due to the presence of a high resistance splice, the matching of an old conductor with a new conductor in a pair of line wires, or bad connections in the central office equipment. Leakage resistance is caused by contact of one wire with a tree or other partially conducting objects, by a broken or cracked line insulator, dirty protector blocks, or low impedance ringers between one side of the line and ground."

Mr. Behm stated that the effect of having high resistance in one side of the circuit is to cause unequal current flow in the conductors and instead of the induced cross talk currents neutralizing one another, as the result of the transpositions cut into the circuit, there will be actually an increased net current flow which is manifested as cross talk.

"A misplaced or omitted transposition," he said, "will also cause cross talk. For this reason, great care is needed in following a transposition scheme to make sure that all required transpositions have been made in the proper locations designated in the scheme. If additional lines are placed sometime in the future, these additional circuits must be properly transposed in accordance with the scheme used for the other lines in present use on the lead."

Mr. Behm commented that in the case of telephone cable, cross talk is not the problem that it is with open wire lines because of the fact that the conductors of each pair are twisted every several inches with the twists staggered. This results in a very effective transposition of all circuits within the cable. Cross talk, however, may result from the accidental splitting of a cable pair in a splicing operation."

"As in the case of transpositions to reduce cross talk," he said, "it is very important that no series resistance of leakage-to-ground unbalances be permitted anywhere along the length of the telephone lines. This means that trees and shrubs must not be permitted to grow into contact with the line wires and that the line wires must be kept free from poor splices or connections. Equipment in the central office must be free of unbalance, especially apparatus bridged between the line and the ground. If ground ringing is employed the ringers must be of the high impedance type and should be equally distributed on the two sides of the line and ground to preserve the line balance."

Drop Wire Usage Trends

IN HIS DISCUSSION of drop wire usage trends, Mr. Behm stated that drop wires which extend the subscriber's circuit from the open wire cable to the subscriber's building amount to less than 3.5 per cent of the total Lincoln T & T's plant value, but accounts for 10 percent of the maintenance account.

"The high cost of drop wire maintenance," he said, "could be attributed to a great extent to the fact that the wire must be located on right

of way over which the telephone company has little control. It is difficult, and in many cases impossible, to provide adequate clearance around trees, buildings and other wires. Other plant can be planned and engineered very carefully but drop wire installations must be improvised to fit local conditions. This, together with frequent subscriber location and building changes accounts for short drop wire life."

Discussing the development of drop wire, Mr. Behm pointed out the following features that have aided in service improvement and cost reduction;

(1) The development of polyethylene covering which serves as a substitute for both the rubber insulation and the weatherproofed cotton jacket.

(2) The development of Neoprene and synthetic rubber covering. Mr. Behm explained that the synthetic rubbers developed during the war as a substitute for drop wire covering were GR-S or Buna S rubber for insulation and Neoprene for the outside jacket. "The electrical and physical properties of GR-S," he said, "are slightly better than those of natural rubber and because it is cheaper it is used extensively for insulating wires not exposed to the weather." He also stated that Neoprene due to its resistance to oil, sunlight, fire and weather, together with its temperature stability, is an ideal jacket for insulated wires.

(3) The development of a parallel wire of a design that provides for complete enclosure with Neoprene of each rubber insulated conductor. This design results in grooves on each side of the parallel wire. These grooves serve as a guide for slitting tools and some manufacturers have deepened the grooves to the extent that the conductors may be torn apart after starting with a cutting tool at the end. This type of construction provides the advantage of complete enclosure of the rubber insulation when the conductors are separated.

In his closing remarks, Mr. Behm stated that frequent failures in drop wires are caused by connections at splices, or at party line and open wire taps.

"These," he said, "can be almost entirely eliminated by proper use of test connectors and sleeves . . . The importance of providing adequate clearance on joint used poles is a factor in drop wire maintenance. On such poles the drops should extend from guard arm hooks installed at the ends of the arm. Properly insulating or guarding drop wire runs on buildings will avoid many cases of trouble and much maintenance expense. In general, serious study should be given the use of the many devices for supporting drop wire . . . Intelligent use of these items will substantially reduce drop wire maintenance cost . . ."

Members of the Subcommittee on Wire Plant which is headed by Mr. Behm as director, are: A. A. Wilson, Illinois Consolidated Telephone Co., Mattoon, Ill.; E. L. Barnes, Rock Hill (S. C.) Telephone Co.; M. S. Bodine, Capital City Telephone Co., Jefferson City, Mo.; Sam Dibble, Citizens Independent Telephone Co., Terre Haute, Ind.; Fox Henderson, Texas Telephone Co., Sherman, Tex.; W. J. Holladay, Alabama Telephone Co., Fayette, Ala.; J. G. Kreamer, American Telephone Co., Kansas City, Mo.; Cliff Lewis, Telephone Service Co. of Ohio, Lima, Ohio, and R. T. Rayborn, Illinois Commercial Telephone Co., Kewanee, Ill.

Features Of Cable Construction & Maintenance

DAN S. SEITZ of the York (Pa.) Telephone & Telegraph Co., in his capacity as director of the Subcommittee on Cable discussed construction and maintenance of cable and made many suggestions of value to the small plant personnel.

Mr. Seitz emphasized that preventive maintenance which means the clearing of trouble before it happens should be featured in every plant, not only as applied to cable but also all other parts of the system.

"A recently developed electronic device," he said, " may be used whereby very high resistance shorts and grounds, also solid trouble, may be detected quickly by running a test shoe along the main frame terminals at the rate of about 10 lines per second. The instrument will give an audible signal when a line having a fault is touched. The testing may be done in dry weather, locating the lines that are likely to fail in wet weather."

Dan S. Seitz, York, Pa., is Director of the Plant Subcommittee on Cable.

Mr. Seitz recommended that periodic tests of the underground plant should be made and in areas where the sheath is positive to earth, corrective measures applied to eliminate or minimize the danger of sheath failure.

"Competent engineers," he said, "should devise ways to eliminate the offending current which might require one method at one point and an entirely different treatment at another because there is no cure-all method.

"The correct interpretation or analysis of the readings produced by an electrolysis test or survey is very important in solving corrosion problems. Voltage readings between the sheath and earth or other structures at the danger points. Therefore, any cable sheath that is positive to earth, water, gas or other underground structure should be considered to be in danger of damage by electrolysis regardless of what the voltage reading values happen to be. However, by neglecting electrolysis warnings we may be sure to have subsequent expensive underground cable failures."

Commenting that there are many simple, easily overlooked features of preventive cable maintenance—such as ring missing, slack in cable, bowing, etc.—Mr. Seitz pointed out the following facts:

(1) A single cable ring missing, if not replaced, will eventually be the direct cause of a sheath break, and slack due to rings out of place or any other reason will also cause trouble.

(2) Bowing is usually caused by improper strand tension; it should never be neglected.

(3) Measuring the tension with a strand dynamometer will indicate whether the tension is too great; in which case slack should be cut into the strand and the tension thereby reduced to the proper value.

(4) If the strand tension is already correct, pull and remove slack from the cable. This latter method should be avoided when the cable contains a complement of quadded pairs because it is likely to unbalance the quads.

(5) Grade clamps correctly placed and maintained will prevent creeping

BIG ENOUGH FOR A BIG JOB

Current events are again proving the dependence of the country on telephone service when many things have to be done—and done fast. The advertisement on the opposite page points out how the country's telephone service has grown since 1941. This timely telephone message appears in national magazines during October.

AN ADVERTISEMENT OF THE
BELL TELEPHONE SYSTEM

TELEPHONE LINES ARE HUMMING

THIS COUNTRY'S telephone service is one of its greatest assets in time of emergency. It unites millions of people—helps thousands of businesses to get things done quicker – and is a vital part of our national defense.

Since 1941, the Bell System has increased the number of telephones by more than 16,000,000. There are nearly twice as many now as nine years ago. Billions of dollars have been spent for new telephone equipment. The number of Bell Telephone employees has increased to more than 600,000.

All of this growth and the size of the Bell System are proving of particular value right now. One reason this country can outproduce any other is because it has the most and the best telephone service in the world.

BELL TELEPHONE SYSTEM

of the cable at corners and on a grade.

Members of the Sub-Committee on Cable, in addition to Mr. Seitz, are: Paul Bransby, Columbia (Pa.) Telephone Co.; Everett Conrad, South Carolina Continental Telephone Co., Sumter, S. C.; Eldon Eccles, Blue Earth (Minn.) Telephone Co.; George King, Missouri Telephone Co. Columbia, Mo.; Arthur Leis, Telephone Service Co. of Ohio, Lima; Oscar Newman, Ohio Consolidated Telephone Co., Portsmouth, Ohio, and R. M. Wopat, Pennsylvania Telephone Corp., Erie.

Developments In Carrier And Radio Equipment

G. T. SIMS, Dallas, Texas, director of the Subcommittee on Radio, told the Plant Conference that since the end of World War II, the development in the carrier field has advanced enormously. Before the war the principal use of carrier equipment had been by the Bell System Companies and only a few of the Independents.

"In the last few years," he said, "a combination of great usage of toll, a large number of electronically trained people, improved components, improved methods of production and several other factors, have served to bring carrier usage by the Independents to a high point."

G. T. Sims, Dallas, Texas, is director of the Plant Subcommittee on Radio.

Mr. Sims stated that most Independent manufacturers were slow to recognize the needs for suitable carrier equipment by the Independent operating companies, whose needs were drastically different from the Bell System long haul, regulated, multi-channel carriers.

"What the smaller companies required, he said, "were carriers which would not need to operate over long distances, would be space saving, power saving and easily installed and maintained with general personnel. They would need to be stackable so that additions or removals could be made a channel at a time or channels could be dropped at more than one point. Over short distances, regulation of levels which vary with line conditions was not considered necessary.

"The heavy program started by the Independents after the war of converting small exchanges into community dial offices trunked into larger exchanges, caused the development of carrier equipment arranged to handle dialing over its own channel or an associated channel, thereby eliminating providing of dc legs."

Mr. Sims explained that since the start of the short haul carrier development, there has been a steady change in requirements, design, and arrangements as both manufacturers and operating companies gained experience, cleaned up the "bugs" and developed new ideas. The present day carrier, as made by several manufacturers, answer the requirements in the Independent operating field with only a few exceptions.

"There has been a steady build

STRONGER

Taylor-Colquitt
VAPOR-DRIED
POLES

Taylor-Colquitt's exclusive process of drying timber with hydrocarbon vapors produces poles that are definitely 20 to 25 per cent stronger than those steam conditioned in the conventional manner before creosote treatment.

This increased strength permits users to install poles one class lower than would be needed if other types were used. Not only does this result in substantial savings in pole costs but is also reflected in worthwhile reductions of installation expense.

With added strength go the careful timber selection, precise manufacture and adequate preservative treatment that have long made Taylor-Colquitt Creosoted Pine Poles so justly celebrated.

For greatest long time economy always specify Taylor-Colquitt Vapor Dried Creosoted Pine Poles.

Taylor-Colquitt Vapor Dried Poles are distributed to independent telephone companies exclusively by Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7, Illinois.

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SPARTANBURG, SOUTH CAROLINA

PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA

INVEST YOUR "PIN MONEY" IN THE BEST

LOCUST PINS

Locust wood is practically impervious to decay and is impenetrable to moisture. Because of its close-grained hardness locust can be machined into strong, long lasting pins of standard specifications that can be counted on to retain their size and shape.

OAK BRACKETS

Oak pole brackets of unquestioned quality are in demand now as never before in the face of the qualifications necessary in the equipment and materials needed today to "keep 'em talking." Present day maintenance and repair have every reason to demand and get only the best.

GLASS INSULATORS

Research and experiment have produced in Hemingray insulators a glass insulator that is better than any ever before offered.

Non-porous, non-deteriorating, uniform coefficient of expansion and high mechanical as well as high dielectric strength are some of the many qualities that rank Hemingray the "best on the line."

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RAYTHEON
FM MOBILE RADIOPHONE
will do for YOU...

NO INSTALLATION PROBLEMS. Control unit mounts handy to driver in any type vehicle. Separate transmitter-receiver unit installs under dash, overhead, under seat, in trunk, anywhere.

HONESTLY RATED. Nominal values of output power 20 to 30 watts over the entire frequency band. Normal operation well within rated capacity means less frequent tube replacement, lower maintenance cost.

NO INTERFERENCE. Guaranteed to meet all FCC requirements including adjacent channel operation and modulation limiting.

LOWEST COST. You can't beat Raytheon Radiophone for economy of initial cost, operation and maintenance.

FOR ALL MOBILE EQUIPMENT. Available for 6, 12, 24 or 32 volt DC operation.

EVERY DESIRABLE FEATURE. Plug in mike either side of control case. Auxiliary volume control for noisy conditions. "Stand by" receiver operation saves 3 amps continuous battery drain. Furnished complete with all accessories. Single or dual channel models covering the entire 152-174 mc. frequency range.

50-60 and 20-30 watt base station equipment also available in console, cabinet or wall mountings. Write for complete information. Address Dept. 6460 (TE).

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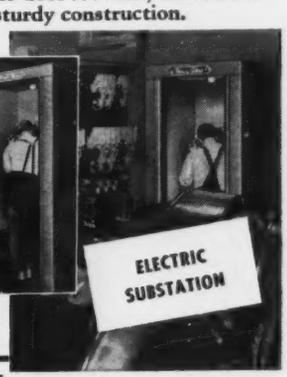

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Please send booklet describing Burgess-Manning Acousti-Booths.

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up of circuit groups," he said, "in many areas so that conditions are changing for many companies. There is a definite need for short haul systems of more than three channels, and the requirements for this type are not changed, that is, they should have low first cost, be space saving, power saving, stackable to a certain degree, should have inexpensive level regulators, should be capable of coordination with other systems in regard to frequencies and levels, and should handle dialing. Developments have been made and are being continued along these lines by at least two manufacturers.

"Another development which should be mentioned is the design of systems to work in a higher frequency assignment than the previous 30 kc systems, such as that above 150 kc. There are a number of advantages here, such as the less stringent filter design requirements and the ability to stack the higher frequency units on the lower frequency systems, thereby increasing usability of available wire circuits. The disadvantages in some cases more than offset the advantages and these are higher attenuation of signal at the frequencies used, radiation, the susceptibility to line leakage which results in poor reliability, particularly in areas where heavy moisture or ice conditions are prevalent, and the fact that transpositions have not been developed that will permit the use of more than one such system on a lead. The requirements for a transposition scheme would be so exacting as to be very expensive and probably impractical."

Mr. Sims commented that a number of cases are known where individual companies have introduced modifications of carrier equipment to adapt it for particular uses. Generally these adaptations are by means of applique units.

"Some of the arrangements," he said, "besides normal ringdown toll and straight dialing, are for handling toll station code ringing, post-pay manual and automatic coin box service, individual line subscriber service, prepay coin box service and selective party line rural service."

Discussing the new developments in the use of radio in the Independent field Mr. Sims stated that considerable work is being done on designing new selective signalling systems for mobile radio use. Study and development of the well known transistor is still going on. This promises to be an important item in radio and other allied fields.

"A multi-channel radio system," he said, "using microwave frequencies, has been developed and placed in service. This system provides an economical means of obtaining large circuit groups, particularly between inaccessible points which might involve, for instance, laying expensive submarine cable."

In his concluding remarks, Mr. Sims said that both Independent manufacturers and operating companies have become carrier minded and to some extent radio minded, and stated present extensive use of this type equipment will become even more extensive and that new applications and arrangements will result.

Members of the Subcommittee on Radio are Mr. Sims as director, M. S. Burton, Gulf States Tel. Co., Tyler, Texas; C. L. Cox, Missouri Telephone Co., Columbia, Mo.; William Doughty, Home Tel. & Tel. Co., Fort Wayne, Ind.; R. L. Koehler, Assoc. Telephone Co. Ltd., Santa Monica, Calif.; R. E. Lawrence, Carolina Tel. & Tel. Co., Tarboro, N. C.; J. F. O'Connell, Illinois Commercial Tel. Co., Springfield, Ill.; M. C. Royalty, Southwestern Assoc. Tel. Co., Dallas, Texas; R. A. Schultz, Commonwealth Tel. Co., Madison, Wis., and Lucian Spencer, North Plains Tel. Co., Dumas, Texas.—*To be concluded in the November issues with summaries of addresses delivered by B. C. Burden, Ray Blain, G. W. Miller, and C. H. McLean. . . .*

USITA Directors

Directors whose terms expired in 1950 were re-elected as follows: E. M. Blakeslee, Santa Monica, Calif.; B. L. Fisher, Martinsville, Va.; L. W. Hill, Tarboro, N. C.; D. O. Hood, Medford, Ore.; R. A. Lumpkin, Mattoon, Ill.; Kelley McNish, Bristol, Tenn.; R. W. Siemund, Chicago, Ill.; H. H. Wheeler, Lincoln, Neb.; J. H. Wright, Jamestown, N. Y.; Judson Large, Chicago, Ill. and R. K. McBerty, Galion, Ohio.

New USITA Directors are: Burton W. Saunders, president and general manager of the Illinois Commercial Telephone Co., Springfield, Ill., and Andrew J. Sordoni, president of the Commonwealth Telephone Co., Forty Fort, Pa.

Rural Telephones

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(Continued from page 38)

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power companies of this country from 2½ million dollars to 50 million dollars. You surely do not put people out of business by increasing your purchases from them 20-fold in a decade.

"The folks in the rural areas need satisfactory telephone service perhaps more than anyone else and I am sure they are not going to be satisfied unless they have it if it is possible to get it, as it will be under this program."

In closing, Mr. Wickard made an appeal for support and cooperation. "I am of the positive conviction," he said, " that anything that we can do to help rural people get more satisfactory service is a distinct benefit to the entire telephone industry as well as to the rural people themselves. A telephone conversation requires at least two parties. It is just as important for the people on existing systems, such as the business men in small towns, to talk to the farmers as well as it is for the farmers to talk to them. Recently I told an official of the Bell system that we now have an opportunity, if all of us work together, to see that every person in this country is within reach of a telephone.

Check Future Issues For Balance of USITA Convention Papers

WE STRETCHED the pages of this issue of TELEPHONE ENGINEER & MANAGEMENT to capacity in order to publish many summaries of the valuable papers presented at the USITA Convention. Summarizations not appearing in this issue will appear in the November issues of Telephone Engineer Publications. Check the November issues for the following important reports:

"How Radio Can Serve The Independent Telephone Industry," by Ballard Atherton, president of the Mutual Telephone Co., Honolulu, Hawaii.

"Radio and Its Legal Implications to Independent Telephone Companies," by Hon. Norman S. Case, Washington, D. C.

"A Pacific Coast Operating Man Speaks His Mind," by D. O. Hood, president of the Columbia Utilities Co., Medford, Ore.

"Telephone Communications In A New Era," by Bartlett T. Miller, vice president of the American Telephone & Telegraph Co., New York City.

"Problems Common To Public Service Enterprise," by James F. Oates, Jr., chairman of the Peoples Gas Light & Coke Co. of Chicago.

"American Free Enterprise," by Claude A. Putnam, president of the National Association of Manufacturers.

"Summaries of Activities at the Traffic, Accounting and Commercial Conferences."

What Is AHEAD?

(Continued from page 41)

the equipment and render the service. The Federal Communications Commission seems intent on wanting the telephone companies to make a series of tests to report on the adequacy of the various devices.

The telephone companies, both Bell and independents, through this Association, have taken the stand that it would be a proper question to raise as to whether that is a type of service which telephone companies should render and, therefore, should provide in their tariffs; but the telephone companies feel that they should not be called upon to take part in the tests of the relative merits of the different manufacturers — but rather should they determine, with equipment which they believe is workable, whether such service meets a demand from their subscribers and whether these subscribers, therefore, desire it and whether it should be added to our tariffs. What I want to emphasize is that this case is one of a different nature than I think has happened before and it might possibly, and I think very mistakenly, open the way by which manufacturers of all sorts of gadgets could ask that their particular inventions be tested. The point I want to make is that one road is a question of exploring types of additional services which the telephone company might render service with its plant; the other road is a question of testing or exploring the particular equipment of various manufacturers. The telephone companies have told the FCC that they will permit devices to be tried out on their lines for a limited period, but the test is the FCC's and not the companies'!

Incidentally, and more fundamentally, I think some of these new developments deserve our consideration. I think we should not be blind but should rather be imaginative with reference to any increased service which we can properly render to our customers in providing telephone service to them, particularly with the rapidly increasing unit cost which we have to make to serve each subscriber. But I think it is the telephone industry's own business as to how it does it. This is one thing I think is ahead in independent telephony.

Another matter which is in store

"What? Only 16 poles to the mile?"
Crapo HIGH TENSILE TELEPHONE LINE WIRE
COMPARE THE SPAN LENGTHS!
SIZE NO. 12 B.W.G. HEAVY LOADING DISTRICT
Crapo HTL-135
SPANS TO 350 FEET
Crapo HTL-85
SPANS TO 225 FEET
B.B. GRADE
SPANS TO 150 FEET
INDIANA STEEL & WIRE CO. MUNCIE INDIANA

Crapo High-Tensile Line Wire Cuts Cost of Rural Lines

Spans to 350 feet are possible in Heavy Loading Districts where Crapo HTL-135 Telephone Line Wire is used. This means that, in straight runs over flat open terrain, the number of poles per mile can be reduced to 16.

Substantial economies both in construction and maintenance are the result. Initial building costs are lower because of marked savings in material and labor. Upkeep expense is reduced because there are fewer pole structures to maintain. Service interruptions are minimized because Crapo High-Tensile Line Wire offers increased resistance to ice and wind, provides a greater margin of safety.

Crapo High-Tensile Telephone Line Wire is available for prompt shipment from jobbers' warehouse stocks or from our mill.

FURNISHED IN TWO STRENGTHS

Crapo HTL-135 Telephone Line Wire has two-and-one-half times the strength of standard B.B. wire; makes possible spans of 350 feet in Heavy Loading to 500 feet in Light Loading districts. Crapo HTL-85 (No. 12 B.W.G.) has 60% greater strength than B.B. wire, provides for spans of 225 feet in Heavy Loading, 375 feet in Light Loading areas. Both have telephonic transmission qualities superior to B.B. wire.

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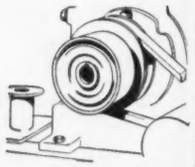
DIGS 9-foot holes anchor holes screws in anchors with SPEED and EFFICIENCY

Highway's Model P. E. Digger gives you clean, fast operation in every step of digging holes 9 to 16 inches in diameter in average soil and in setting poles. We know of nothing to equal it in operation, design, or low-cost maintenance.



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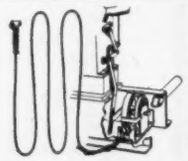

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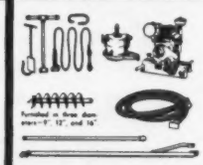

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Complete Portability. Can be transferred from one truck to another without alterations or additional equipment. No power take-off necessary. No truck drive-shaft needed. Torque arm can be attached to base of the engine or to the platform of the truck. Light enough for easy handling by two-man crew.

Fast Operation. Digs up to a 9-foot hole, in average soil, 9 to 16 inches in diameter, in just a few minutes.

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for independent telephony—and also for the Bell System—is one which our alert Executive Vice President has already called to your attention. I refer to the "Service Standards for Telephone Utilities," prepared in draft form by the Committee on Engineering of the National Association of Railroad and Utilities Commissioners. Mr. Bailey sent you a copy of these proposed rules with his Letter No. 464 on May 11, 1950. We were asked by the National Association of Railroad and Utilities Commissioners engineers for comments and we formed a special committee known as the "Service Standards Task Force." Member companies were asked for their comments to give to our Task Force, and many companies replied, and the thanks of all of us are due to them. But what I particularly wish to draw to your attention, and as the responding companies have recognized, is the fact that the service standards proposed by the National Association of Railroad and Utilities Commissioners Engineering Committee go beyond rules governing the adequacy of service and have encroached on managerial domain.

The National Association of Railroad and Utilities Commissioners has a set of standards for electric service —what variation in voltage is permissible in a good quality of service, what percentage of error is permissible in electric meters; they have standards for gas service as to heat content of gas and other factors.

It can well be argued that a set of service rules as to what constitutes good telephone service—such as average time of answering, frequency of being confronted with a busy path in equipment, quality of transmission, etc.—could be justified.

But the present draft of rules contains features which are actually directives as to how to provide adequate telephone service, what type of equipment and how much, in some cases, to use, and other matters which actually constitute managing rather than regulating. I think you will agree that we should have no serious objection to the establishment of a set of service rules which are practicable and workable which will help both companies and regulatory authorities in meeting their obligation to the public. What should be of the most interest is to see if we can help make the rules good rules, and to that extent our Task Force has had discussions with the Chairman of the National Association of Railroad and Utilities Commissioners Engineering Committee and offered its cooperation.

(*Please turn to page 60*)

Heavy Snowfall Isolates Many Communities

Sumtown, Dec. 22—Winter was ushered in on a Grandiose style as snow drifts block roads throughout the county. Towns and rural communities are isolated as telephone service fails; authorities claim it will be before service can be Crews of workmen building lines. severe ill

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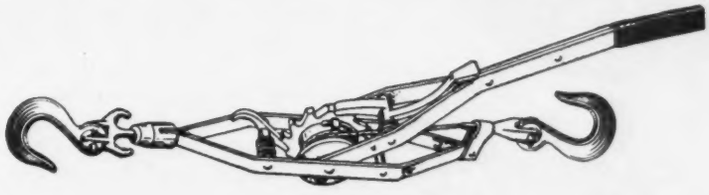

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Time on both sides has made it impracticable to have materially modified the proposed rules which the National Association of Railroad and Utilities Commissioners Engineering Committee desires to present to its Association convention in November. We hope the National Association of Railroad and Utilities Commissioners Engineering Committee will include in any presentation it makes in November comments which our Task Committee and representatives of the Bell System have jointly made as to the limitations of the present service rules and that that will have the effect of having the matter referred back to the Engineering Committee of the National Association of Railroad and Utilities Commissioners with instructions to make the rules pure service standards and not directives as to what to do and how to do it. I think the matter is important and that is why I mention it now. We hope the National Association of Railroad and Utilities Commissioners itself will instruct its Engineering Committee as I have just suggested and, therefore, that our task group and the Bell representatives will have opportunity to assist the National Association of Railroad and Utilities Commissioners Engineering Committee in developing a set of good service rules.

But whatever results from this, I think we must anticipate that there will probably be an increasing use by state commissions of rules providing service standards for telephone utilities. If properly drawn, I think we should have no fear of such rules because I think we ourselves know what good service is and we ourselves want to render good service.

Coming directly to one of our own intra-industry matters, as our various communities in the United States grow, we find an increasing number of instances of community of interest between towns and cities previously separate but becoming contiguous by growth. The result telephone-wise is a desire on the part of the public that those adjacent communities be considered one telephone community, and so we automatically get into consideration of what we term extended service over the short-haul heavy usage routes, or the next step, considering the two communities as one exchange area for rate purposes. Whether the exchanges concerned in such a development are under the same ownership or different ownerships would seem to be a question in which the public is not concerned—the public wants the type of telephone service best suited to its needs. It seems that our problem is so to arrange telephone service from both an

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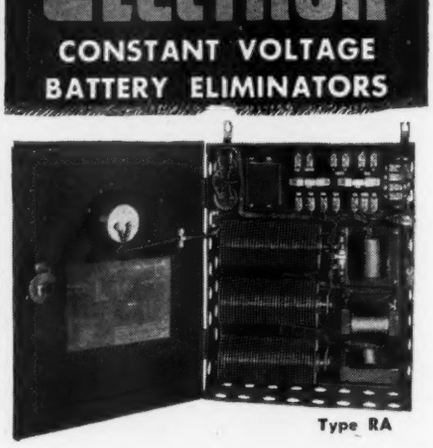

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engineering and rate standpoint that the public is best served and if more than one ownership is involved it is up to us to develop and determine what is the proper and relative part played financially by each interest. This, as I say, is something which we can anticipate will increasingly confront us. The Commercial Committee is working on this whole question of extending area service and extended service rates, and a special sub-committee has been created to go intensively into the problem of the general pattern of financial relations which should result when two or more ownerships are involved in a given extended service area. As I said, I think the telephone industry should provide what we determine to be the best telephone service to our communities, and if more than one ownership is involved those ownerships should determine between themselves the financial basis of doing the business.

Service Requirements

ANOTHER thing which we have mentioned from time to time within the past year or two, and which is increasingly ahead of us I believe, is the demand for a different kind of service in the smaller and rural areas. We all know that conversation over the magneto telephone can be as satisfactory as one over the common battery telephone, whether manually or dial operated, but styles change. Street cars on rails rendered good transportation service, but the public wanted to ride on rubber tires, and so we have busses. We can all point to dozens of developments from one kind of service or product to another, sometimes helped on by the desire or whim of the purchasing or using public, sometimes helped on by economics. I think both desire and economics are at work in urging the telephone service to be as it is sometimes called "modernization," and I think all of us, small companies and large companies alike, are well advised to extend modern plant to meet the service requirements of the public. There may be certain mental difficulties in doing it, but it seems to me that the more we get ourselves into the spirit of what we would do if we were in a competitive business, the more effort we will make to have the very best and most business-like service we can.

The telephone industry has always been respected and highly regarded for its research and development. There is every evidence that the independent manufacturers, as well as the Bell Laboratory, are carrying on extensive and intelligent research not only to improve the quality of our service which is already so near perfection, but also to improve the efficiency of the equipment we use to render it. The independent segment of the industry can be proud of the part is has played in developing new techniques and practices. I think we can count on continuing to have a plant of ever increasing efficiency and excellency and one which will continue, as it has so long in the past, to be more and more economical to overcome or offset these increases in basic costs which we seem always to have with us.

Financing & Rates

TWO SERIOUS problems which we have had with us for the past five years, and which we can still look ahead to having with us in the future, are financing and rates. It apparently is still uniformly an experience that as we install telephones we get more applications for telephones. We have to expand and that calls for more and more money. We also need more money for replacements and modernization at increasing unit costs. The financing of this continuous expansion and improvement means that the ownerships have to have the courage and belief in their business to go out and get new investors and to have existing investors add to their interest in the business. Some ownerships have a hesitancy to seek more equity capital because it changes the balance of control. But it seems to me that it is a constructive thing to do, and the managements ought to have the courage to do it as it is the only way to produce a sound financial structure and in a sound business way to provide the service requirements of the public. The independent telephone industry has been known for its courage and initiative in the past, and I am confident that it will be there in the future.

On the other side of this financing, of course, is this question of rates, which has been with us for the past several years. The butcher never hesitates to change the price of his steak from 69c to 79c by posting a new price tag in his window. He may do that several times during the year. We have to go before the regulatory commissions to get rate increases that get more public notice and that seem to be more influenced by politics, as can be seen by some of the campaign oratory. Increasingly because of the continued unexpected demand for telephone service and the physical inability to anticipate this demand and have plant built to meet it, there are more and more arguments against rate increases until after the additional service is provided. But I think some of the court decisions are having a sobering effect upon this view, notably a recent decision in Arizona in the case of the Mountain States Telephone and Telegraph Company where the court told the commission in no uncertain terms that the company had been building plant as fast as it reasonably could and that merely because it had not been able to supply all the demands for service it should not be denied a fair return on the plant it was using to serve the customers who were connected. We are going continuously to have to have increased rates as

(*Please turn to page* 62)

Statement of the Ownership, Management, and Circulation Required by the Acts of Congress of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233)

of Telephone Engineer & Management, published monthly at Pontiac, Illinois, for October 1, 1950.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago, Ill.

Editor—Ray W. Smith, 7720 Sheridan Road, Chicago, Ill.

Managing editor—John G. Reynolds, 7720 Sheridan Road, Chicago, Ill.

Business Managers, Ray W. & Roy F. Smith, 7720 Sheridan Road, Chicago, Ill.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

Ray W. Smith, Editor

Sworn to and subscribed before me this 5th day of September, 1950

Ruth Lowery

(My commission expires Dec. 4, 1953)

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our plants grow, with high cost unit plant, and as our operating expenses grow, with increased labor costs.

This is a job which will be ahead of us apparently still for a few years and it will mean hard and intelligent work with the public and with the commissions. But if we are going to be a healthy business to supply the service required of us this is going to be a necessary program to pursue assiduously and intelligently.

Now in general, as I said at the beginning, some of these individual problems that I have enumerated and discussed are like some of those that the industry met and so well solved in previous decades. If we did not have any new problems in front of us and new things to solve there would not be any fun in life. And there should be a lot of fun and opportunity in the life of an Independent telephone man or woman. We have over seven million telephones in Independent telephony today. It is no stretch of the imagination to say there will be twenty million or more a quarter century hence and the industry will be doing things we don't even dream of now. With any such future prospect, and with the privilege of working with the kind of people who operate this industry—there just aren't any better on earth—the younger people among us should look forward to a life filled with satisfaction of accomplishment and joy of living. The independent segment of the telephone industry has I think always had a sense of satisfaction of having done a job in the American way—individual initiative and individual accomplishment. I think it is a tribute to America and our American institutions and our American way of life that there can exist side by side in the telephone business the biggest enterprise in the world—the Bell System, well managed and successful both in its financial operations and its service to the public—and 5,700 other units of independently owned and managed telephone companies—some large, some small, some very small—all cooperative, all interconnected, all devoted to providing a telephone service not only unequalled but undreamed of in most of the rest of the world. Unless America is remade into something to which it has now no resemblance and in a way in which we cannot imagine, it seems to me that there is a long and successful road ahead in Independent telephony and one on which I said a quarter of a century hence everyone connected with it can look back with pride.—THE END.

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Washington Reports

(*Continued from page 31*)

authorization to put the rate increases into effect are its long range construction jobs to meet the fast growing demands in its territory. It was emphasized that the company's financial condition is not getting better under the rates now in effect and under present trends, in 1951, the conditions will be considerably worsened. The necessary strength to assure good service in normal times and in emergencies is not built up by merely getting by during the good years of the business cycle, it was pointed out.

It was further emphasized to the state regulatory body in California that neither the company nor the commission can meet the problems facing the company on the short-range basis.

NARUC Gives Tax Aid

APROPOS OF the tax problem, valuable aid to the regulated communications services is being mustered by regulatory authorities themselves. The National Association of Railroad and Utilities Commissioners have designated a subcommittee of its Excess Profits Tax Committee to confer with the Senate Finance and House Ways and Means Committees and with the Congressional Internal Revenue staff on the serious plight of utilities if excess profits taxes are levied upon them.

Labor Post For CWA Official

THE U. S. LABOR Department's hierarchy is now replete with men who have telephone backgrounds. Latest appointment is that of Robert T. Creasey, President of the Long Lines Division of the Communications Workers of America (CIO) to the post of Assistant Secretary of Labor. He will work under Secretary of Labor Maurice J. Tobin who served with the New England Telephone & Telegraph Co. for a number of years before embarking on his political career. Creasey received a recess appointment from President Truman and is expected to get quick confirmation from the Senate Labor Department when Congress reconvenes.

REA Policy Bulletins

IT WAS expected with circulation of this issue of TELEPHONE ENGINEER AND MANAGEMENT that the Rural Electrification Administration

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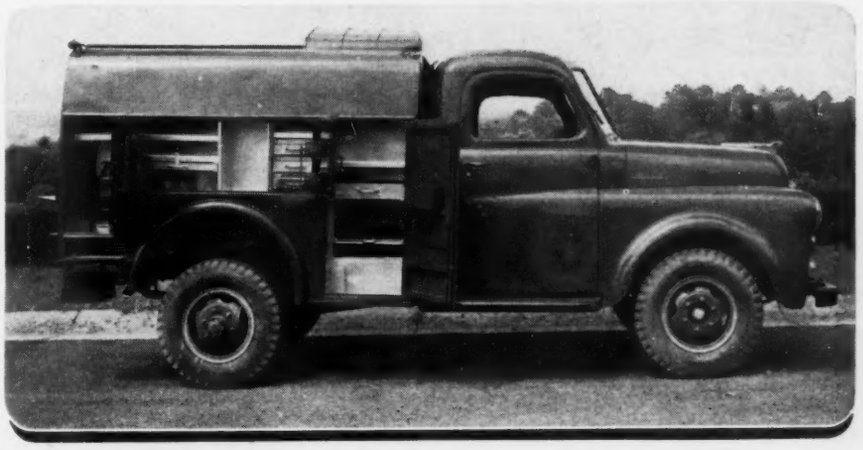

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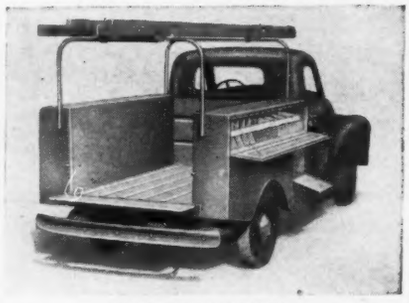

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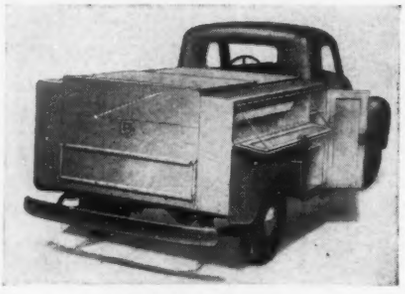

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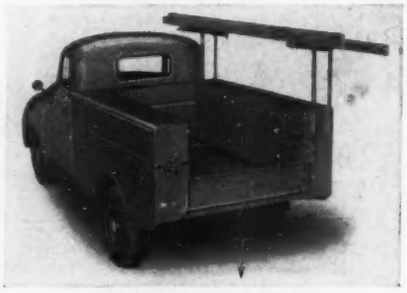

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would be in the process of distributing additional policy bulletins, covering instructions to the staff handling farm telephone loans. The bulletins are expected to cover 30 important categories of instructions.

Under the REA rural telephone program, some idea of the growth of loan authorizations of the agency was given in approvals of money amounts to five companies recently. These approved loans amounting to $1,248,000, the largest of which was $409,000 for the Oklahoma Telephone Co. of Kiowa, Okla., and will permit the company to quadruple the number of subscribers it now serves. The company will construct new plant, which with the old, will serve 1350 rural telephones as compared with the 342 now receiving service.

Possibly as an indication of growing importance of the REA telephone loan program in the eyes of Administration leaders, it is understood that no effect at all was felt on the telephone loan phase of REA operations by the mandate of Congress that $550 million from non-defense expenditures.

President Truman, at recent dedication ceremonies of a Virginia rural telephone company—which received the first loan for a conversion program—in a call to a subscriber of the company stressed that farm telephones are particularly important now, because of the national defense program.—THE END.

Rural Co-op Planned For Stevens County, Ks.

The possibility of establishing a rural telephone cooperative association for the eight-county area served by the Pioneer Electrical Cooperative Association was discussed by Stevens County, Ks., farmers at a recent meeting in Hugoton, Ks.

W. C. Rhoades, manager of the Pioneer Cooperative Association with headquarters in Ulysses, Ks., explained the program in general and answered questions.

The meeting, like similar meetings in each of the eight southwestern counties, was called to acquaint the farmers with the possibility of borrowing money needed to build a cooperative telephone company from the REA.

Present plans provide that existing exchanges will be coordinated with the proposed telephone cooperative but it will be necessary for the cooperative to own or control them. In some localities plans are being made to issue equity in a telephone cooperative in exchange for part ownership of an existing mutual.

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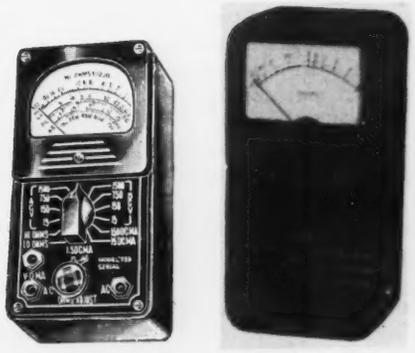


Fig. 8 (left)—Pocket Type Multi-range volt-ohm-milliameter. . . . Fig. 9 (right)—Multi-scale Ohmmeter. Capable of reading resistance from 0.2 ohm to 50,000,000 ohms.

Modern Testing Procedures

By B. C. Burden

Engineer, Lincoln, Nebraska

Part Two Of—"A Series of Articles written for the Apprentice Wire Chief and Beginning Troubleman." Part One of this article appeared in the September 15 issue of TELEPHONE ENGINEER AND MANAGEMENT.

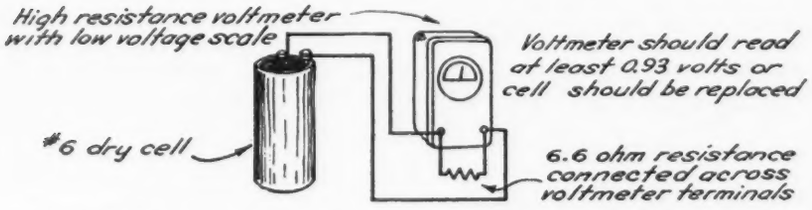

High resistance voltmeter with low voltage scale
Voltmeter should read at least 0.93 volts or cell should be replaced
#6 dry cell
6.6 ohm resistance connected across voltmeter terminals

Fig. 10—Use of Discharge Resistor and Accurate Voltmeter for Dry Cell Testing.

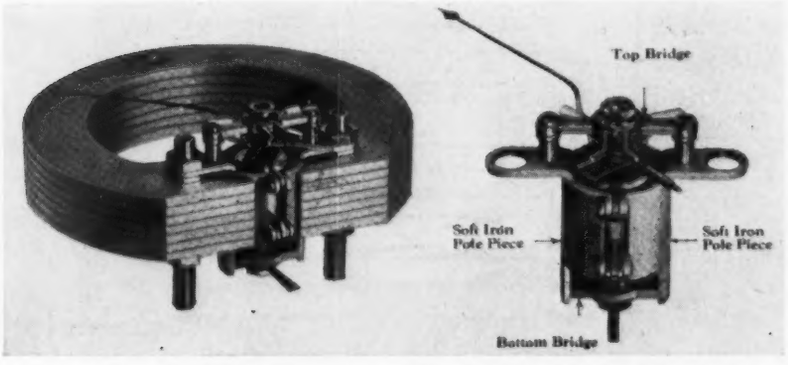


Fig. 11—Instrument Movements are Delicate and Should be Handled with Care. (D'Arsonval Moving Coil and Pole Pieces and Magnet).

THE MOST useful piece of testing equipment the rural or city troubleman can carry is the small pocket type multi-range volt-ohm-milliammeter (*see Fig* 8). Some may argue that this instrument is not as important as the troubleman's portable telephone, however, in the writer's experience and observation, a small portable tester will locate more trouble and do it quicker than will a portable directional type telephone. However, both instruments are necessary and should be furnished rural and toll line troublemen.

The small portable multi-range testers have the special merit of giving quantitative significance to tests. They are equally useful on line and instrument trouble. Potential sources of future trouble, particularly in instruments, that would ordinarily be passed up by ordinary talking or listening tests, or tests involving the use of a test telephone as a simple continuity device, are readily detected by means of ohmmeter tests.

Features Of Portable Test Units

THE SIMPLEST of the portable testing units is the single range ohmmeter. This consists of a basic 0 to 3 volt voltmeter and two small flashlight cells as the power source. This range extends from 0 to 100,000 ohms. The single range instrument has the advantage of being easier to read, particularly by inexperienced troublemen, than the multi-range instrument. Such instruments are somewhat lower in price than the multi-range type. Their disadvantage lies in the fact that a single range ohmmeter scale does not permit as accurate a reading or as wide a range of application as is possible

with an ohmmeter which has at least two and preferably three meter ranges.

The multi-range ohmmeter (*see Fig.* 9) usually has a low resistance range which permits measuring splices and connections suspected of being "high", also the testing of line wire on a mile-to-mile basis. It can also be used to measure and compute the approximate distance to shorts and crosses which are located close to the tester. The higher resistance ranges are useful for checking subscribers telephones, and for measuring leakage. On the instruments which also have voltmeter and milliammeter scales, the voltage scale is useful for measuring the remaining life of dry cells in magneto telephones.

It must be used in conjunction with a discharge resistor for accurate tests of dry cells. (*see Fig.* 10) Milliammeter readings are often useful in determining the current flow available to transmitters at subscriber's stations.

Wide Range of Tests With Portable Ohmmeter

WHEN TROUBLEMEN lack an appreciation of the genuine merit of the Multi-range pocket test instrument, particularly on rural lines, it is generally due to failure to understand the many tests which can be conducted with the ordinary pocket-ohmmeter.

Some of the many tests which can be made with this relatively inexpensive and highly portable piece of test equipment are:

(1)—Tests for line *leakage* (shunt or to ground). Use highest resistance scale.

(2)—Tests for line *shorts* and/or *crosses*. Use low or medium scale, depending on distance to fault.

(3)—Tests for line *opens*. Use highest resistance scale. On some ohmmeters it is possible to judge the approximate distance to opens by the "kick" of the needle due to charging current.

(4)—Directional tests on open wire. These are made by opening one side of the line at junctions, and then testing in each direction. These tests are particularly useful in checking the direction of shorts, grounds, and crosses through blind miles or at any branch line point.

(5)—Circuit tests on subscriber's sets. Location of faults such as: a.—Shorted non-ring through capacitors. b.—Concealed shunt leakage in generator or hook spring assembly. c.—Partly shorted or open induction coil, receiver, or ringer. d.—Open in wiring harness. e.—Unreliable operation of hook switch and generator shunt springs. f.—Condition of subscriber's inside wiring and of protector blocks.

(6)—Mile-by-mile checks of open wire resistance.

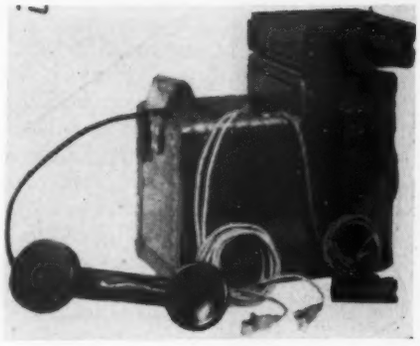


Fig. 12—The West Directional Trouble Locator and Portable Telephone.

Precaution In Testing C. B. Lines

SOME TROUBLEMEN prefer to test common battery subscriber lines with the battery removed at the central office. The presence of the C. O. battery on the line complicates the use of the ohmmeter due to the fact that the C. O. battery gives a false indication on the ohmmeter and can in some instances (because of higher voltage) actually damage the instrument.

Others prefer to use a simple common battery test telephone for tracing line trouble. When trouble is traced to the telephone set, it is disconnected when checking with the ohmmeter.

The basic meter used in high grade portable ohmmeters is a sensitive milliammeter (or microammeter). Some of these units will give full scale deflection on as little as 50 microamperes. When making ohmmeter tests, it must be kept in mind as mentioned above that the line or equipment under test *must not have any voltage present*, otherwise the needle may be thrown off scale and the movement severely damaged.

It is likewise important that the voltmeter, ohmmeter, or milliammeter range selected be one which fits the type of measurement being made. The range selected should be one which preferably gives a deflection as near mid scale as possible.

Multi-Range ohmmeters with

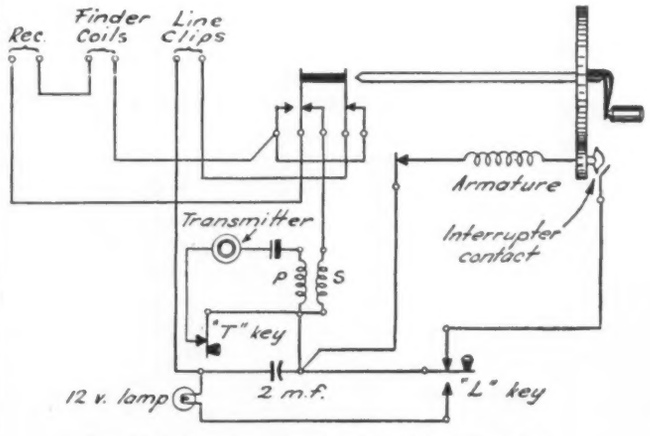


Fig. 13 (above)—Circuit of the West Test Set.

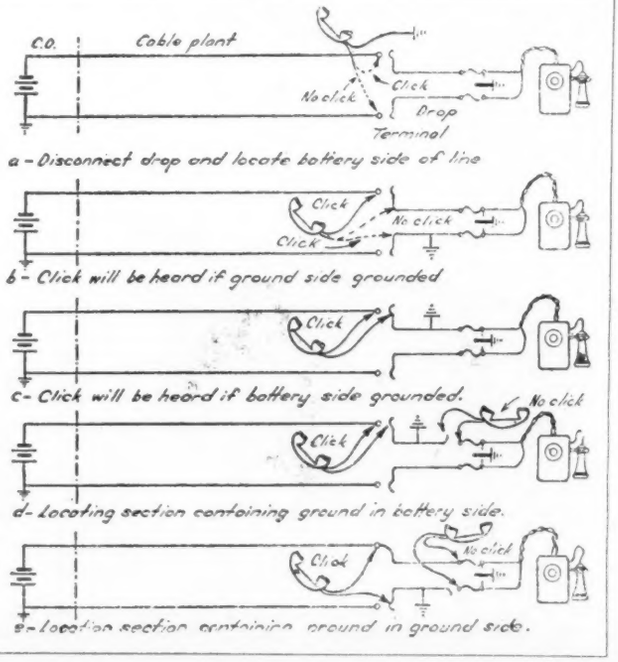


Fig. 14 (right)—Typical Tests on City Common Battery Lines Using a Common Battery Hand Test Set.

Nearly a *bad* fire

Hot flame roared from her spilled skillet but Mrs. Burton's frantic call had the firemen there in no time . . . A bad one? Yes, if the telephone had not been right there . . . ready, dependable.

• • •

Behind the accepted reliability of telephone service there is a dramatic story of continuing *research*, of skillful *manufacture* and dependable *operation* written by America's telephone industry.

Western Electric's part in the story is to manufacture the kind of telephone equipment which helps to make this reliable service possible.

Western Electric

TELEPHONE APPARATUS AND CABLE

a low resistance scale capable of reading values as low as ¼ ohm are very useful in locating trouble in key and relay contacts. Contact trouble of the "come go" type will often be passed up when a subscriber's instrument or switchboard circuit is tested on the high resistance ohmmeter scale. The reason is that the voltage supplied to the contacts under test is usually higher when the high resistance scale is used and may actually break down an oxide or dirt film which may be causing trouble of an intermittent type. In locating trouble of this type, the meter (with low resistance seal in question) is connected directly across the contacts. Repeated operation of the contacts will indicate by variations in the ohmmeter needle reading whether or not the contacts are making a good low resistance contact.

When using the current scales, be sure they are never connected in shunt, but *always in series* with the circuit under test. Also be reasonably certain that the current flowing will not exceed the range selected. The milliameter range can be burned out instantly by simply connecting in a circuit in such manner that it receives even as little as 1.5 volts.

Electrical testing instruments with D'Arsonval moving coil movements have jeweled bearings and very close clearances between coils and field poles. (*see Fig.* 11) This movement, like a good watch, can be damaged by rough handling. A carrying case is desirable for transporting these instruments in trouble cars, or at least they should be carried on the seat to receive some protection from jolting.

Testing With Portable-Telephone Directional Tone Sets

AN ESSENTIAL piece of testing equipment for all rural line testing is a portable telephone tone set. This is a combined magneto telephone, tone generator, and directional fault locating equipment. One of these units which is very popular is the "WEST test set" (*see Fig.* 12). This set consists essentially of a special magneto generator, induction coil, hand set, battery, capacitor, switchboard lamp, fault direction coil, and several push button keys. Its schematic circuit is shown in *Fig.* 13.

Theory of West Directional Fault Location Set

THE WEST set can be used both as a simple field telephone and as a directional fault location indicator. The directional feature operates by virtue of the relatively strong electro-magnetic field created around

Meet B. C. Burden, well known telephone engineer from Lincoln, Neb. Mr. Burden writes exclusively for Telephone Engineer Publications.

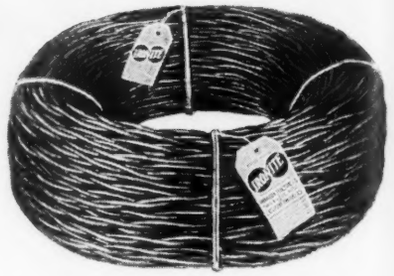
the faulty conductor by the tone current from the special magneto generator. When the generator is connected to a line under test and the crank turned, the generated tone voltage is impressed on a capacitor which by means of a commutating device is discharged into the line with high peak intensity and at such frequency as to offer optimum conditions for small pick up coil. The voltage creates

(*Please turn to page* 70)

The Winners

THE MAN who wins is an average man, not built on any particular plan; not blessed with any particular luck, just steady and earnest and full of pluck. When asked a question he does not "guess." He knows the answer is "No" or "Yes." When set a task that the rest can't do, he buckles down till he's put it through. So he works and waits, till one fine day there's a better job with bigger pay, and the men who shirked whenever they could are bossed by the man whose work made good. For the man who wins is the man who works, who neither labor nor trouble shirks, who uses his hands, his head, his eyes—the man who wins is the man who tries.—*Cincinnati Telephone Bulletin.*

STROMB



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A new extra-flexible rubber insulation—holds tight to conductor.

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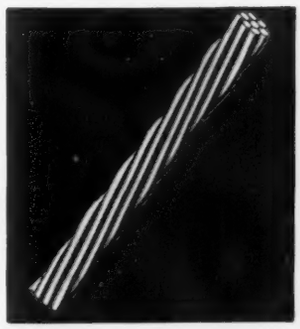

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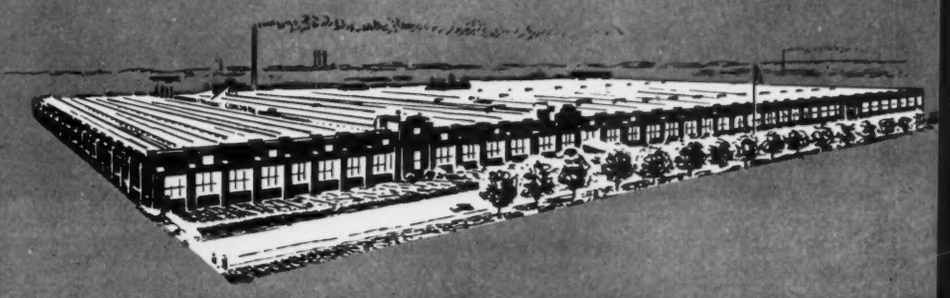

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a tone current flow in the direction of the fault in the line circuit. Directional indication is obtained by clipping the small finder coil over one of the two line wires on each side of the point at which the connections of the tone set are made. A distinctive tone will be heard much louder on one side (the side in the direction of the fault) than on the other. The closer to and the lower the resistance of the fault, the louder the tone is heard. The use of this set at the junction of main and branch lines may save miles of driving in the wrong direction.

The West set also has a 12-volt miniature lamp connected in series with the generator. This constitutes a visual continuity tester. The brilliancy of the lamp indicates the approximate resistance of the circuit to which the test set is connected.

In addition to its value for obtaining directional and continuity tests, the "West set" is also useful for talking and ringing on either C. B. or magneto lines.

Use of Common Battery Handset Test Telephones

TEST TELEPHONES of the common battery type equipped either with or without dial are useful in common battery manual and dial exchanges for testing lines and for the use of the troubleman in talking and signalling on the line. This instrument can be used for running down shorts, grounds, and opens, on common battery subscriber circuits. When so used, the central office battery must be left on the line in trouble and not "clipped out" at the main frame as is often done in order to remove the permanent from the board. Common battery lines which are in trouble can be connected to a hospital board, or if only a few lines are in trouble they can be "plugged up" with an ordinary cord circuit in a vacant position so as to maintain battery on the pair in trouble.

Fig. 14 illustrates how tests can be made with a telephone test set to run down difficult faults on common battery lines. Many prefer this method of locating line trouble over the use of a portable ohmmeter. However, the writer's preference runs definitely to the ohmmeter as it gives a positive quantitative test and speeds up trouble location. A test telephone is of course an essential part of every troubleman's equipment as it is needed to call the central office when out on a C. B. line.—*Part III of Mr. Burden's article on "Modern Testing Procedures" will appear in the November,* 1950, TELEPHONE ENGINEER AND MANAGEMENT.

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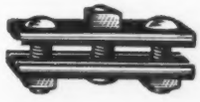

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IN OVER 100 PRINCIPAL CITIES

QUESTIONS and ANSWERS

IN THIS ISSUE Mr. Mitchell discusses—(1) Connections for phantom circuit repeating coils, and (2) use of standard voltmeter for measuring resistance.

PROBLEM: **SOLUTION:**

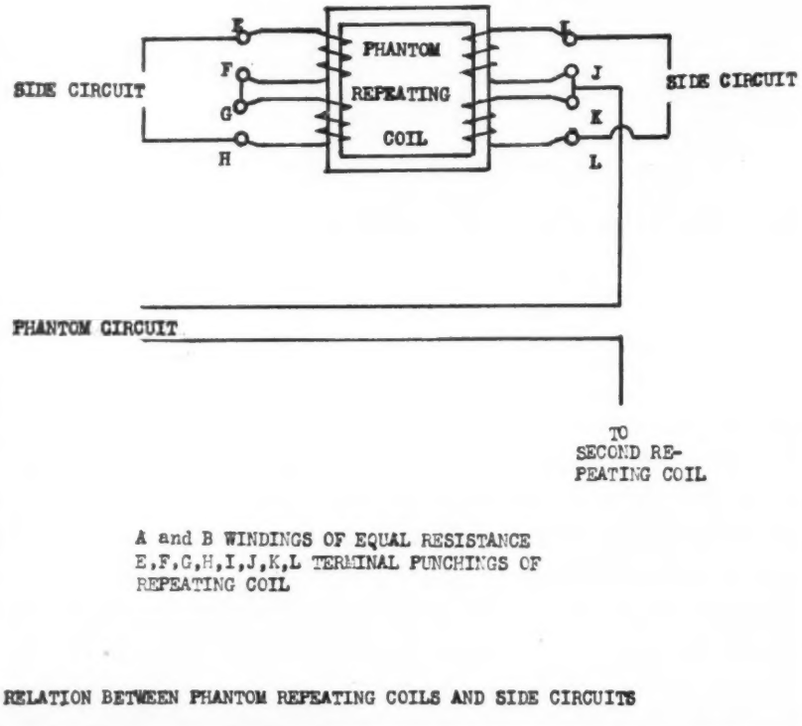
By Jay G. Mitchell

Question: I am trying to get a phantom circuit from two metallic circuits but have not been able to obtain any satisfactory results on the phantom. I am using two Kellogg #18 repeating coils and two Western Electric coils. There is a difference of ten ohms between the Kellogg and Western Electric coils. Please advise. Stamped and directed envelope is enclosed for prompt reply.

Answer: In answering this inquiry it must be assumed that the writer has assured himself that the coils which he proposes to use are of the proper type for the purpose. The description given does not make it possible to check this point. It must also be assumed that the several necessary preliminary steps have been taken to prepare the two physical circuits for use as the side circuits of the proposed phantom. These two physical circuits must be electrically similar to each other. Each of the four line wires involved between the terminals of the proposed phantom must be of the same impedance. Each physical circuit must be transposed. This is especially important if any electric light and power or other circuits are parallel to the telephone circuits. Each physical circuit must be free from high resistance or imperfectly made joints and from conditions likely to result in low insulation either continuous or intermittent.

In installing the repeating coils those which are alike should be placed at the same end of the phantom. It would be much better if all the phantom repeating coils were of the same type and of the latest and most improved design. In this case the two *Kellogg* coils should be installed at the same end of the phantom and the *Western Electric* coils at the other end. Each of most phantom circuit repeating coils is provided with eight terminals or punchings for attaching wires. Each pair of terminal punchings represents one winding of the repeating coil of which there are four. These windings, in most cases, are not of exactly the same resistance there being usually two windings of the same resistance and two other windings of a slightly different resistance. In installing the coils it is advisable to connect together in series the two windings which are of the same resistance. In effect this gives the repeating coil two windings, one of one resistance (composed of two individual coils of the same resistance) and one of another and different resistance (composed of the two individual other coils of different resistance). All the windings in the four individual coils should have the same number of *turns* however. The sketch shows schematically how one of the four phantom circuit coils should be connected into the physical side circuit. Each repeating coil for a phantom circuit should have its own individual lighting arrester connected on the line side. Phantom circuit repeating coils are easily damaged by lightning and when so damaged may give no indication of being defective except in inferior transmission. Such damaged coils must, of course, be replaced.

When all the preliminary steps have been taken and the four repeating phantom coils have been *connected at both terminals of the phantom* a transmission test over the two physical circuits may be made. If the coils are defective, incorrectly connected, or of the wrong type the transmission over the physical circuits in which they are connected may be unsatisfactory *when it was satisfactory be-*



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End objectionable noise interference due to transient and induced voltages, and provide additional lightning protection in bell circuits, with the Vincent Rare Gas Relay. Compact, non-mechanical, the Vincent Rare Gas Relay is easily inserted in the bell box, or at the ground connection or protector block on compact handsets, in series with each bell. It needs no further maintenance.

Since the resistance of the relay is practically infinity below 60 volts, its normal breakdown voltage, the line remains normally free from paths to ground. Ringing voltage of 85 volts ionizes the rare inert gases, is transmitted without difficulty.

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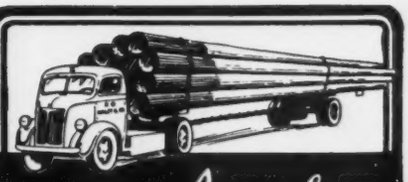
fore their installation. The coils should be disconnected in that case and the transmission test should be repeated. If the phantom circuit coils were of the proper type undamaged and properly connected into the physical circuits the transmission over the phantom should be superior to that over the physical side circuits.

It should be emphasized that any intermediate telephones connected to either of the physical side circuits between the terminals of the proposed phantom must be disconnected. If the phantom circuit is otherwise satisfactory but is unduly noisy then a transposition scheme must be worked out and this involves a sketch showing all the wires in the lead in which the physical side circuits are found, all paralleling electric light and power circuits or other possible disturbing conditions and all pole locations. This is an individual study however and cannot be analysed in advance of the preparation of the layout sketch. In connecting the wiring to the terminal punchings of the repeating coil it may be that the phantom will be inoperative because the short jumper which connects two of the terminal punchings together to place two windings in series has been so connected as to put these two windings in a noninductive relation. The remedy is to reverse the connections to one of the windings involved.

Question: We have a portable direct current voltmeter the resistance of which is 10,000 *ohms and we would like to use this voltmeter in insulation and other resistance tests using the* 50 *volt telephone office battery. The voltmeter scale is* 0-150 *volts and we will arrange to make the required wiring connections. The difficulty encountered is that the readings of the voltmeter, in our attempts to measure resistance, have no apparent relation to the value of the resistance under test. Can you help us out?*

Answer: The use of a voltmeter of this type is of great help in many ways in the maintenance and operation of any telephone office. On the basis of the inquiry, however, it will suffice to present a tabulation of the external loop resistances indicated by the various readings obtained. The voltmeter should be connected in series with the unknown resistance and the testing battery, in this case the 50 volt exchange storage battery. Fluctuations in the testing battery voltage will, of course, cause variations in the results obtained for any given external loop but they may be disregarded in the ordinary course of testing telephone circuits, except



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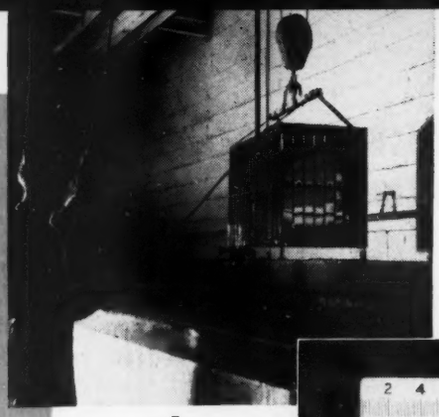

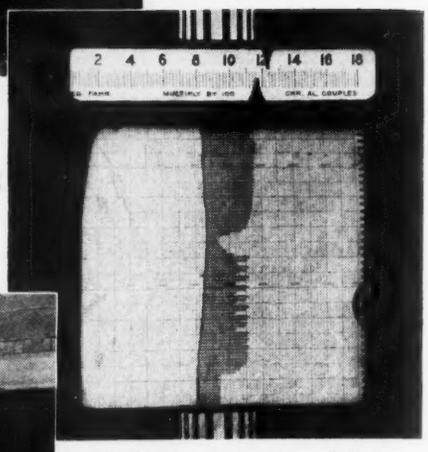

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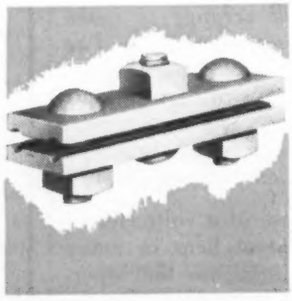

L-M Guy Clamp, with high-strength bolts and Torkol-treated nuts for easy tightening, firm holding, with no thread-corrosion. Heavy steel, hot-dip galvanized. Square holes keep bolt from turning.

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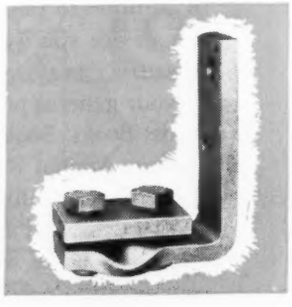

Universal Messenger Hanger for minimum clearance between pole and conductor. Flared groove prevents nicking the strand and permits use of this hanger on both small angle and straight runs.

LINE MATERIAL . . .
Telephone Line Construction Materials

when extreme accuracy is essential and the battery voltage fluctuations are severe.

The tabulation which is given below will be found to be accurate and may be reduced to the form of a curve readily. It is computed on the basis of the conditions given for a voltmeter without any shunt connected.

VOLTMETER READINGS	EXTERNAL LOOP RESISTANCE IN OHMS
0.0	open
2.5	190,000.0
5.0	90,000.0
7.5	56,666.6
10.0	40,000.0
12.5	30,000.0
15.0	23,333.3
17.5	18,571.4
20.0	15,000.0
22.5	12,222.2
25.0	10,000.0
27.5	8,181.8

IF YOU'D like Jay G. Mitchell's technical and helpful opinion on some question, a postcard will bring you a reply in these columns. Or if you're in a hurry, please send along a stamped self-addressed envelope for immediate reply.

30.0	6,666.6
32.5	5,384.6
35.0	4,285.7
37.5	3,333.3
40.0	2,500.0
42.5	1,764.7
45.0	1,111.1
47.5	526.3
50.0	0.0

This inquiry opens up every interesting field of study and will be discussed at length in an early future issue.

Plan New Co-op For Superior, Wis.

A meeting of workers and committee members of the proposed Douglas Rural Telephone Cooperative was held recently in the Head of the Lakes Cooperative Electrical Association office, Superior, Wis.

Chairman Wesley Thompson said that more than 30 volunteer canvassers are calling upon their neighbors in the towns of Superior, Summitt, Oakland, Parkland, Lakeside, Amnicon and Hawthorne, Wis.

More than 1,000 telephone applications have been received by the canvassers.

AUTOMATIC ELECTRIC

Type 60A cable terminals

Give you every needed feature

Use these durable Type 60A Automatic Electric Cable Terminals for connecting sub-station drops or open wire lines to lead-covered cables. Constructed of heavy glazed porcelain with terminals and hardware of high grade copper-silicon alloy. Terminals are reversible so that cables can be run from the top or bottom and mount easily on poles or buildings. The heavy, sheet metal cover (not shown) is chained to the housing of the terminal and contains chart for recording connections.

Cat No. SA-51, 11 pair with stub (above)
Cat. No. SA-53, 16 pair with stub
Cat. No. SA-55, 26 pair with stub

Product of the Specialty Department of

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
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Revenue Boosters

By Richard Allen

"INSTALLER-SALESMAN" . . . a large part of the success of the Ohio Bell's Complete Telephone Service program revolves around the activities of the installer, who has three very important jobs combined in one.

Principally, his job is to see that the customer's request is filled as ordered, and to do the job correctly so that it will give the best telephone service possible. Doing the job according to the "specs" will also result in a very small amount of maintenance on the installation over the years to come.

***IN MANY CASES** a jack and plug extension fits the needs of the customer better than the conventional type extension. In the picture above, the installer has just finished such a job in a customer's bedroom and the telephone is ready for use here, and can be moved to any other part of the house where the subscriber may wish to take it for readily available use.*

A second feature of his job, but a very important one, is the fact that *he is the direct contact between the company and the customer*, and the impression that the customer receives depends upon his conduct and workmanship while he is in the customer's home or office. Efficient workmanship and courtesy are bound to leave a good impression, and although they are too obvious to need explanation the degree to which they are carried out makes all the difference in the world in what the public thinks of the company.

The third important phase of the installer's job is salesmanship—not the high pressure variety—but helpful suggestions that will increse the usefulness and pleasure that customers can receive from complete service.

For example on an installation order the installer should first determine with the customer the best location for the telephone as to convenience of answering, proper lighting and a location where the telephone will not be in the way. A good job of installing the inside and outside wiring with careful attention to get the right amount of slack in the drop wire completes the job.

***AT ANOTHER** subscriber's home, where the occupants spend a great deal of their time in their garden, away from the house where the telephone bell can be easily heard, the installer suggested attaching a bell to the outside of the house. They will hear this bell ring plainly come next gardening season.*

While in the customer's home the installer can also make helpful suggestions concerning extension telephones in other parts of the house, jack and plug extension arrangements and outside bell attachments for the gardener who wants to be able to hear the telephone while working outside.

These same features hold true for business installations and here too the installer can make helpful suggestions on extensions, 1-A key equipment, visual signals and bells that would be useful in supplying a Complete Telephone Service.

STROMB

24-hour guaranteed direct current, with

electrox battery eliminator

Model PA-0500
Electrox Battery Eliminato

Designed specifically for the Operator's Circuit on Magneto Switchboards, the PA-05004 type illustrated guarantees current even if your AC fails!

When operating from 110 volt, 60 cycle lighting circuit, it delivers a constant, humless direct current. If the alternating current supply fails, a built-in Power-off Relay automatically transfers the operator's circuit to stand-by dry cells.

Other models available for Lamp Signal (PBX) and Automatic (PAX) systems. Products of Rectifier Division, Schauer Manufacturing Corp.

STROMBERG-CA

STROMBERG Telephone CARLSON

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better than ever!

DIAMOND C POLES

For durability, use DIAMOND C

because they're made in a new and modern plant

Something new has been added!—at Pineville, Louisiana—a modern, enlarged creosoting plant offering faster delivery and better-than-ever quality in telephone poles of this well-known, well-liked brand.

Diamond C poles are made of Southern pine, carefully selected from live growing trees and graded according to physical properties desired. Each pole is pressure-treated with 8 lbs. (or more if you wish!) of grade No. 1 Creosote Oil, in accordance with AWPA specifications.

Reduce loss in revenue due to pole failure. Buy Diamond C from S-C!

the new cane *seat is cooler - cleaner - more comfortable...*

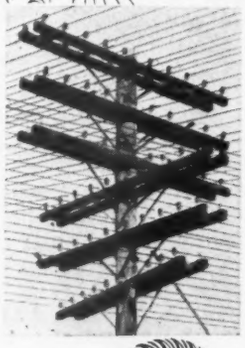
sturgis SC-240

Literally "by request"—this new operator's chair retains all the posture advantages for which Sturgis is famed and adds the cool, clean comfort of a *cane* seat. The posture-curved, well-cushioned back rest is covered in genuine leather.

The exclusive Sturgis "Follow-Flex" feature automatically adjusts to the operator's every movement, supports her restfully all the time, discourages fatigue, keeps her at top efficiency.

Other new and welcome features include a plastic-coated steel foot ring which retains its color and a handy purse holder, available on request. Six seat heights, all adjustable.

"dependable" *means both the trade-mark & the guarantee of cross-arms by* American Cross-Arm Inc.



The finest pole and wire installation is useless if cross-arms fail. "Dependable" Cross-Arms are all that the name implies—made of sturdy, American woods, long seasoned, fashioned and finished to stand every weather condition from desert heat to mountain blizzards.

In Douglas Fir—Creosoted Yellow Pine or Gulf-Red Cypress.

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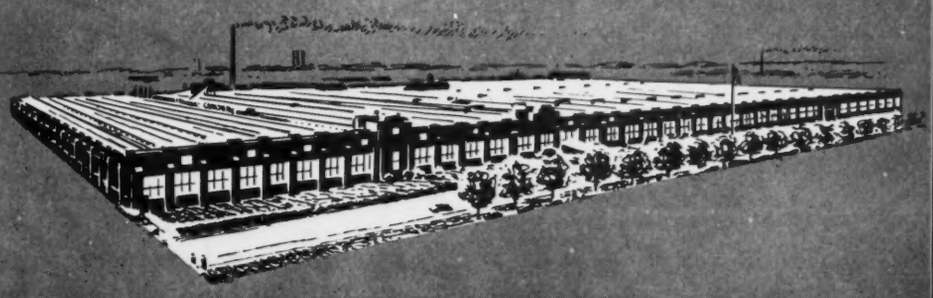

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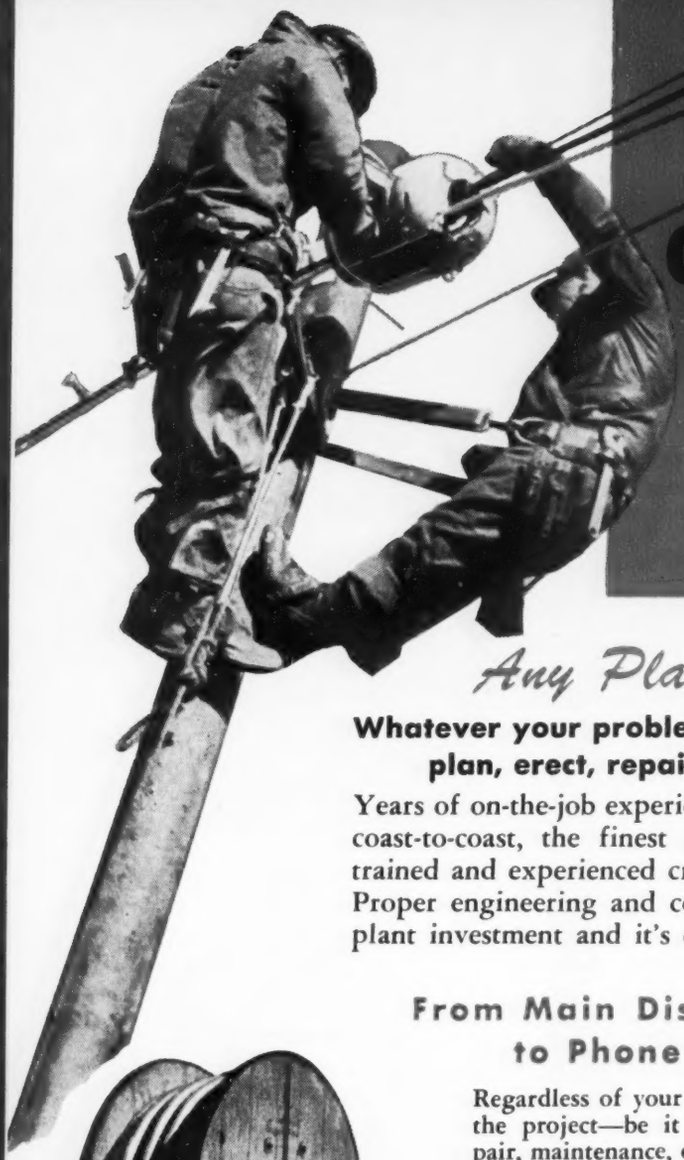

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Whatever your problem . . . where-ever it may be . . . we can help you plan, erect, repair or maintain your outside telephone plant.

Years of on-the-job experience working with independent telephone companies from coast-to-coast, the finest and most modern equipment, *PLUS* the know-how of trained and experienced crews assure you efficient, economical, long-lasting service. Proper engineering and construction methods can have a far reaching effect on your plant investment and it's operating efficiency.

From Main Distributing Frame to Phone Subscriber

Regardless of your location or the size of the project—be it new construction, repair, maintenance, or all three—we can do the job—above the ground or under the ground. Our highly trained personnel working in numerous crews in all sections of the nation are equipped with modern, top-quality construction and maintenance tools. We guarantee to do the job so it will last longer, cost less and operate more efficiently. Call us today!

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Advice on Your Over-All Construction Planning

Our Supply Division can supply you with the best materials . . . at prices consistent with top quality. We give you a complete service from the start and follow through until the job is completed, approved and accepted. All the work is done to A.T.&T. specifications unless otherwise requested. We have the skill and experience to do the job right. Let us give you time and cost estimates on construction, maintenance or repair jobs. No obligation. We're as near to you as your telephone. Call us now!

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ENGINEERING • CONSTRUCTION • MAINTENANCE

TOPEKA, KANSAS PHONE 4-2621

New York Companies Complete Merger

Chatham (N. Y.) Telephone Corp. and Rensselaer Telephone & Telegraph Co. have consolidated to form a new corporation known as Columbia & Rensselaer Telephone Corp.

Clifford Sayer, Chatham, president, said the purpose of consolidation was to create a stronger economic unit to serve subscribers more adequately. He said present service would be maintained and expansion and improvements undertaken by the new corporation.

The New York Department of State listed capital stock of the corporation as 6,300 shares, 300 preferred and 6,000 common.

The corporation operates 11 exchanges including those at Chatham, Nassau, West Lebanon and Berlin, and serves some 4,300 telephones in northeastern Columbia County and southeastern Rensselaer County, extending along the Lebanon Valley to the Massachusetts state line.

Among the 12 directors are Robert M. Dean, Nassau and A. C. Garner, John C. Carpenter, Dr. Frank C. Maxon and Lester E. Gifford, all of Chatham.

E. B. Barlow Retires From Stromberg-Carlson

The recent retirement of Edmund B. Barlow, foreman of the Stromberg-Carlson Model Shop, from active service with the company, marked the completion of a more than 40-year

EDMUND R. BARLOW

career in the telephone industry. Mr. Barlow, who started with the Garford Manufacturing Co., Elyria, Ohio in 1904, came with Stromberg-Carlson in 1916 when that company was assimilated by Stromberg-Carlson.

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at only $34.50

MODEL R

Size: 4"x4½"x10, shpg. wt.: 8 lbs.

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PREMAX

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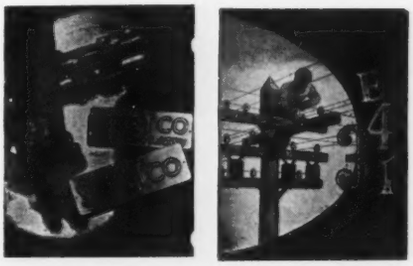


Utilities make a DOUBLE saving when they adopt Premax Stamped and Embossed Metal Markers and Tags for identification: First, they cost less than stenciling to install; second, they outlast the pole and have no upkeep!

Send for sample and prices

Premax Products

Division Chisholm-Ryder Co., Inc.

5145 Highland Ave., Niagara Falls, N. Y.

New transit maintenance body provides compartment space for wide variety of tools and materials.

McCabe-Powers Announce New Truck Body

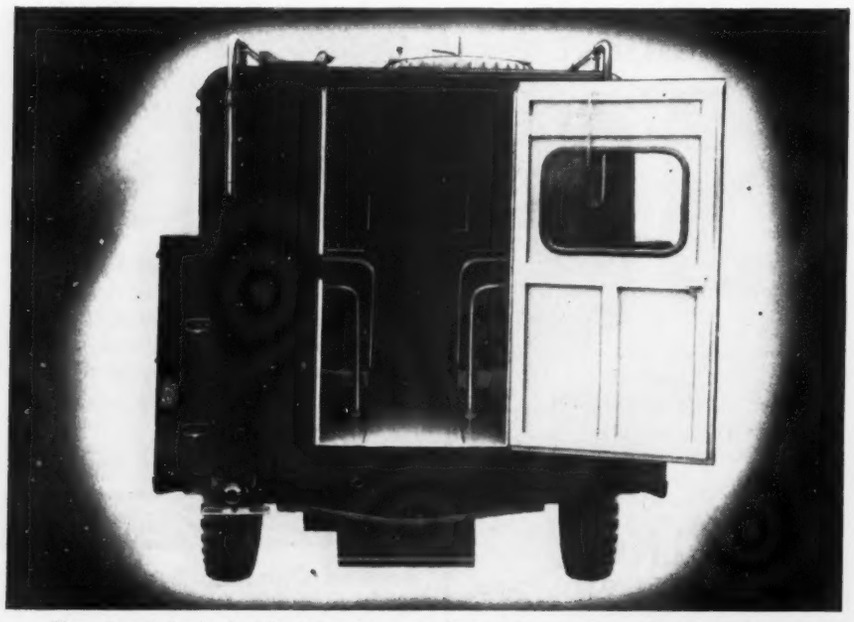
A new transit-maintenance body (see photo) has been added to the POWERS-American line of public utility bodies and equipment. Arranged to permit comfortable transit for four men, in addition to those in the truck cab, this new unit also provides compartment space for carrying a wide variety of tools and materials. The body is particularly useful for surveying crews and maintenance gangs, and is ideal for transporting extra tools and men to large construction jobs.

Compartments may be equipped with shelves, trays, and bins to meet the requirements of any operation. The body roof may be fitted with hand rails and hold-down straps, as shown on these photos, or can be equipped with ladder racks and material brackets.

For full particulars on this new body write POWERS-American Division, McCabe-Powers Auto Body Co., 5900 No. Broadway, St. Louis 15, Mo.

J. N. Johnson Joins Florida Independent

D. H. Lloyd, commercial superintendent, Kentucky Telephone Corp., Lexington, Ky., has announced the resignation of J. N. Johnson, Lexington Area commercial manager. He has accepted the position of general superintendent with the Inter-County Tel. & Tel. Co., Ft. Myers, Florida.



New truck body is ideal for transporting extra tools and men to large construction jobs.

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telephone cable

is pre-tested to operating company requirements

KENNECOTT WIRE AND CABLE COMPANY
PHILLIPSDALE, R.I.

The construction or maintenance engineer judges telephone cable on three points:

1. Efficiency of transmission
2. Uniformity and quality
3. Long life

Kennecott knows this and, before a foot of cable leaves its mill, subjects it to five critical tests:

1. Dielectric Strength
2. Insulation Resistance
3. Conductor Resistance
4. Capacitance
5. Fixed Dimensions

These are everyday specifications. In addition, Kennecott's staff of electrical engineers works constantly to increase the efficiency of its products.

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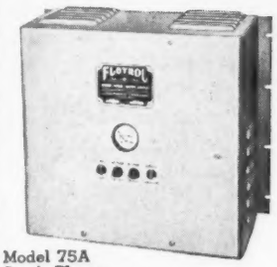
BERG-CARLSON recommends...

flotrol battery charger

the dependable partner of the famous Sub-Cycle



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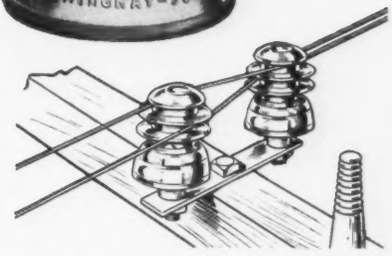


Hemingray's popular "Number 53" now has a new, lower-priced companion—Number 56. Like its larger counterpart, "56," when used in point transpositions, requires no special hardware and goes on standard pins.

Tested by the A.S.T.M. (method D-468-42), it meets the product specifications of utility companies and maintains the high level of quality which has made all Hemingray insulators a standard in the communication industry.

Packed: 40 to a carton, weighing 59 lbs.

Manufactured by American Structural Products Company

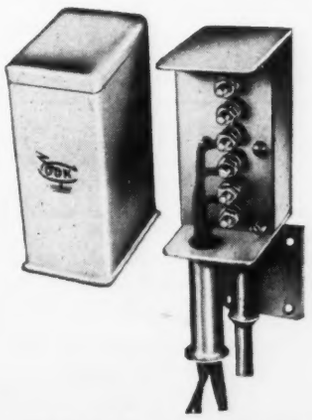
for shorter drops...less bracket lines

cook 3-pair XB terminal

An addition to the well-known XB family of unprotected terminals, this development provides far better, more economical means of subscriber distribution out of rural cable.

The 3-pair XB Terminal was especially designed to reduce to a minimum all factors that would cause high resistance and the possibility of line leakage and maintenance. Hence the heavy, close-fitting welded zinc cover; the noncorrosive Monel faceplate on which are mounted the highly insulated cable studs; the use of the flanged tube as an entrance for drop wires. This tube can be completely sealed after the drop wires are installed.

The new Cook Terminal measures 7½" high, 3¾" deep and 2½" wide. It is furnished with or without cable stub, to user's specification.



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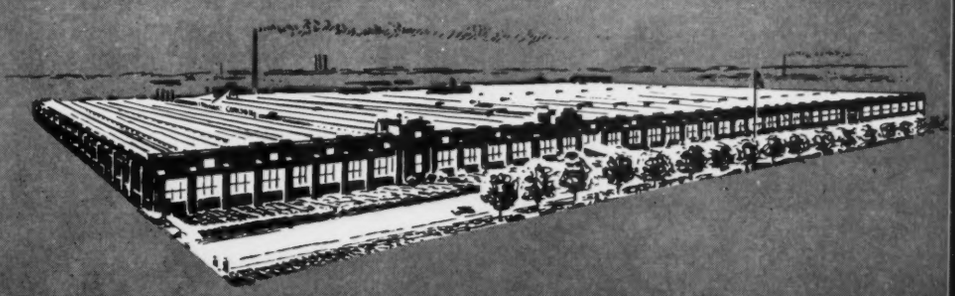

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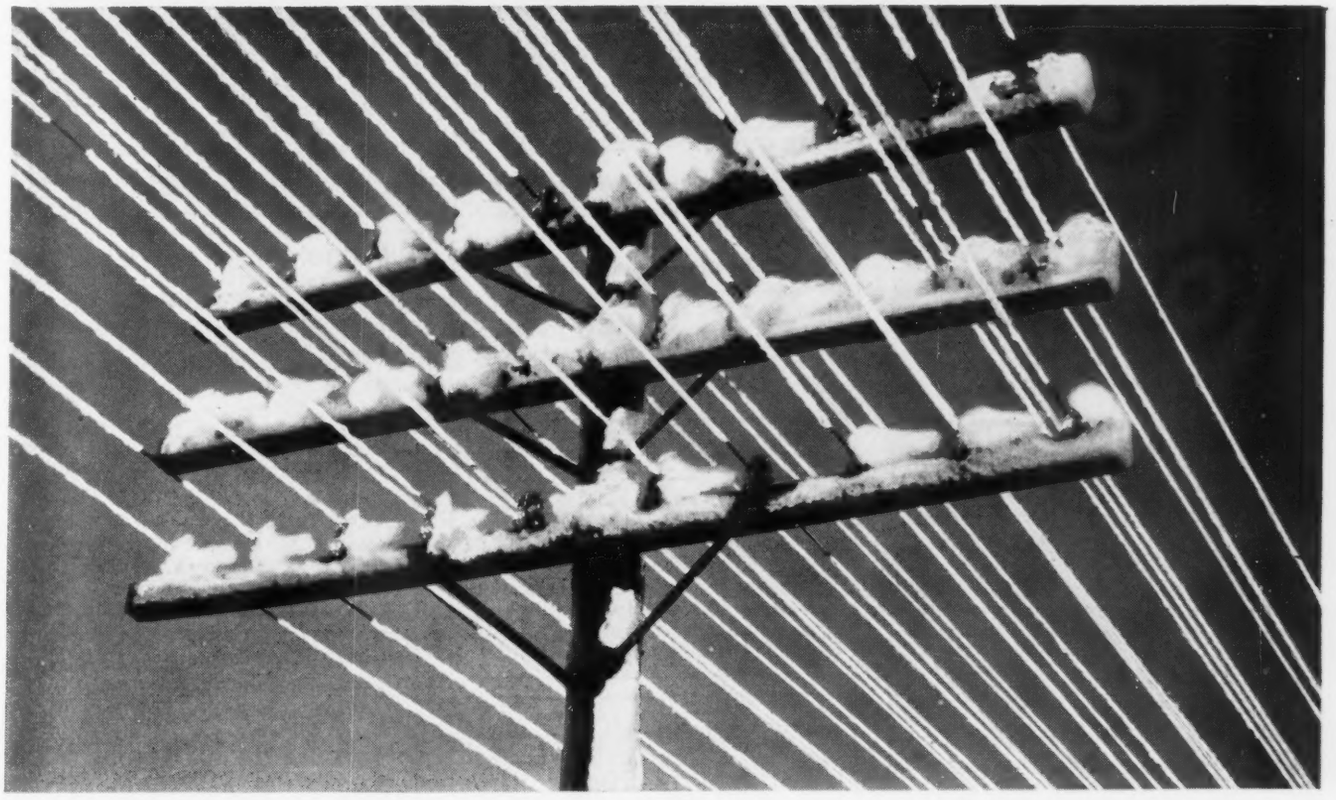

IN THE NORTH, poles must resist the tremendous weight of frequent sleet storms. Avoid preservatives which *weaken* the wood. BARRETT* Coal-Tar Creosote allows poles to retain their maximum strength, and helps to keep the poles at their best and hold the lines aloft.

IN THE DESERT, crossties broom, shatter and split from extreme dryness and heat. Solutions made with BARRETT Coal-Tar Creosote retard this, and also reduce mechanical wear of crossties through their lubricating action on the wood fibers. In poles, heavy treatment with BARRETT Coal-Tar Creosote substantially reduces checking and splitting.

IN THE SOUTH, prolonged high temperatures cause light-bodied preservatives to leach and evaporate from the wood, thus exposing the wood to termite attack and decay. BARRETT Coal-Tar Creosote, heavier bodied and of lower volatility, prevents this condition. It stays in the wood longer under all conditions—doesn't "run out" on the job.

IN THE SWAMPS, forces of decay are almost at their maximum of destructive power. High moisture content and infection from other decaying wood and debris are ever-present menaces. Poles properly treated with BARRETT Coal-Tar Creosote have survived under swamp conditions for years.

IN FRESH WATER, many preservatives leach out of wood. BARRETT Coal-Tar Creosote resists this leaching action. Being only negligibly soluble in water, it is the preferred preservative for use on submerged wood structures, or those exposed to the powerful action of rapidly flowing water.

IN SALT WATER, marine wood-borers give a preservative its severest test. Of hundreds of preservatives that have been tried through the years, *Coal-Tar* Creosote is the only one that has proved consistently effective against teredos, limnoria and other salt-water enemies of wood.

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Kellogg Desk Stands, No. 118 or No. 34 type, complete with cords, like new, at $5.00 each.
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Kellogg Bakelite Shells & Caps, at $.60 each.
Kellogg Receiver Units only, No. 41 type, at $.35 each.
Transmitter, Kellogg No. 22, at $1.25 each.
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4000 tripleeye screw anchors equal to Chance #6346; Joslyn #J6526 or LM #B200005-1 at $1.90 ea. fob North Arkansas. Write
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Northern White and Western Red Cedar
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Also extra incentive pay plan.

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HELP WANTED: Experienced combinationmen and linemen. Permanent positions with good working conditions and employee benefits to those who qualify. Apply Nebraska Continental Telephone Company, Columbus, Nebraska, giving age, marital status and details of previous experience.

HELP WANTED: Experienced telephone linemen, cable splicers and central office switchmen. This is a large Independent telephone company located in northern Indiana, having Strowger Automatic Central Office Equipment. Steady employment and good working conditions. Write giving age, military status, experience and references. Write Box No. 8693 c/o Telephone Engineer.

HELP WANTED: Cable Splicer, good habits, steady employment and good wages. Location—Middle western state. Give detail of references and experience. Write Box No. 8690, c/o Telephone Engineer.

HELP WANTED: We need man with experience in rebuilding magneto and PBX switchboards. Telephone Repair & Supply Co., 1760 N. Lunt Ave., Chicago 26, Illinois.

POSITION WANTED: Telephone executive with 14 years experience as plant superintendent. Class A telephone company, desires position in south or west. Excellent references, age 44, married. Write Box No. 8692 c/o Telephone Engineer.

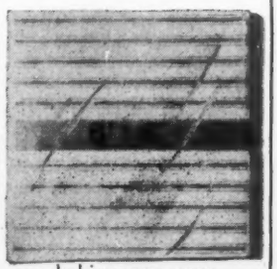
FOR SALE: Entire stock in Magneto exchange located in Northeast Kansas. 1949 gross after Bell commission $11,000. Selling price less than twice that amount. Box No. 8681 c/o Telephone Engineer.

RATES ARE REASONABLE . . . 15 cents a word, except for Situation Wanted Ads, which are only 5 cents a word, in figuring cost of ads, count each word of address in number of words used. All ads payable in advance. Minimum charge $2.00. Special rates for display type ads on request. TELEPHONE ENGINEER AND MANAGEMENT is published on the 15th of each month. Ads should reach us by the first of the month.

Cable-Splicers
WIPING CLOTHS

packed in cartons

Formed-flexible finishing cloths (Patented); Flat finishing cloths; Catch cloths; Crotch cloths and Up-right joint catch cloths. Made of world-prize HERRINGBONE TICKING or imported English MOLESKIN. Write for literature and prices from your jobber or from us.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GEO. E. WILLIAMS, *Mfr.*
3035 ALDRICH AVE., MINNEAPOLIS 8, MINN.

For Sale

FOR SALE: Magneto 5 Bar 1600 compact wall phones with rebuilt transmitter and receiver. Serviceable condition and tested before shipment. $10.00, F.O.B., Chicago. Write or call Clark-Jarvis Telephone Equipment Co., 7367-69 North Clark St., Chicago 26, Ill.

FOR SALE: Lineman's Safety And Tool Belt Sets, Brand New. Thick Multi-Ply Canvass Webbing. **$4.00 per set.** Post Paid. Circular upon request. **Herb Offsink, 559 Sheffield Ave., Brooklyn, N. Y.**

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For a Quarter of a Century Rebuilders of the Independents' Telephone Equipment.

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BRAND NEW, ¼", GALVANIZED

Higher specifications than regular ⅜" strand! Breaking strength over 6,600 lbs. Preformed, 6-strand, cotton center. In 7,100 and 8,000 ft. reels. Mkt. price approx. .05 per ft. OUR LOW PRICE ..... **1c** PER FT.! F.O.B. LOS ANGELES

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BRAND NEW, FABRIC SAFETY BELT

Perfectly preserved, in original factory boxes. Made to rigid Signal Corps Specifications. . . . 71-3094. Complete with plier pocket and safety strap. $7.50 value. NOW ONLY ..... **1.90** EA. Min. order 6

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NEW, 11¼", M. KLEIN #132-15

Hammer forged from high-grade tool steel! Spring tempered with polished heads. Copper wires 4-12 B & S. Iron wires 6-14 BWG. Double chambers reverse side. List price $8.85. OUR PRICE ..... **1.75** EA. Min. order 6

Consider your requirements of the values above and send us your order now. Immediate shipment! Satisfaction GUARANTEED!

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TERMS: Net 10 days to well rated firms.

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160 LBS. GROSS WEIGHT, 3.8 CU. FT. PER REEL

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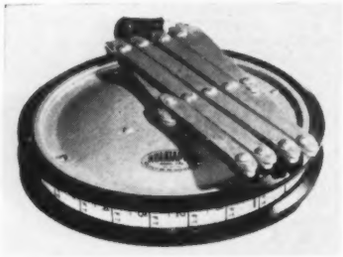
POWER SUPPLY—*Kepco Model 510, manufactured by Kepco Laboratories, Inc.*, features two completely independent voltage regulated power supplies with excellent regulation, low ripple content, low output impedance, fuses on input and output circuits, and output current and voltage meters. Each DC output voltage is continuously variable from 200 to 500 volts, 0 to 200 milliamperes.—*Check New Product 263.*

the New Products Showcase *and* Buyers' Directory



"ROLATAPE":—A new, lightweight rolatape for accurate one-man measurement, vertically, horizontally or around curves has been announced by Rolatape, Inc., Santa Monica, Cal. According to the manufacturer, the new unit permits safe and accurate measurements of from a few inches to almost unlimited lengths by a single individual.—*Check New Product 264.*

ACETYLENE EQUIPMENT — "Prest-O-Lite" No. 1 Lineman's outfit helps you do a better job, quicker & easier. The Linde Air Products Co., 30 E. 42nd St., New York 17, N. Y. —[ADV 1]

ADVERTISING, Directories—General Telephone Directory Co., 604 Pine Ave., Long Beach, Cal., and 185 N. Wabash, Chicago, Ill.—[ADV. 2]

ANCHORS, Plastic Expanding, Universal. All Purpose—Mount in any Material, Holub Industries, Inc., 424 DeKalb Ave., Sycamore, Ill.—[ADV. 3]

ANCHORS & WIRE CONNECTORS—Matthews Scrulix Anchors, Matthews Telephone Wire Connectors. Write for bulletins. W. N. Matthews Corp., St. Louis 16, Mo.—[ADV. 4]

AUGER—The "Alaska Frost Auger." Free trial on your own machines. Henning Electric Motor Co., P. O. Box 786, Fargo, N. D.—[ADV. 5]

BATTERIES, Dry Cell—The Ray-O-Vac Company, 2317 Winnebago St., Madison, Wisc.—[ADV. 6]

BATTERY—WATER UNITS Demineralizers for Tap Water—A. E. Tomkin & Co., 1828 Columbia Rd., N.W., Washington 9, D. C.—[ADV. 7]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.—[ADV. 8]

BLOCKS, AERIAL CABLE—"Tug-O-Wheel" aerial cable blocks for safe and speedy installation of all types of aerial cable. Tug-O-Wheel Products Co., Ballston Spa, N. Y.—[ADV. 9]

BOOTHS—Acoustic Telephone—Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N. Y.—[ADV. 10]

BOOTHS—Churchill Cabinet Co., 2119 Churchill St., Chicago 47, Ill.—[ADV. 11]

CABLE, All Plastic, Aerial, Duct, Direct Burial, PBX, Switchboard.—The Ansonia Electrical Co., Ansonia, Conn.—[ADV. 12]

CABLE SPINNING—The Cable Spinning Equipment Company, 432 Crane St., Topeka, Kans.—[ADV. 13]

CARRIER EQUIPMENT—Adler Telephone & Telegraph Carrier Equipment has been standard for twenty years in the Independent Field. Mfd. only by Southern Electric & Transmission Co., 3127 Holmes St., Dallas, Texas.—[ADV. 14]

CONNECTORS, CABLE—Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.—[ADV. 15]

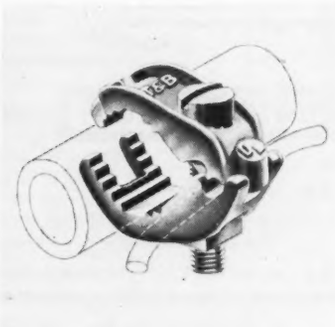
CORDS, Instrument and Operators—Commermercial Cord & Supply Co., 26 Main St., Clifton Springs, N. Y.—[ADV. 16]

CORDS, Switchboard & Telephone—Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.—[ADV. 17]

UTILITY PUMP:—A new, general purpose utility pump for quick and complete removal of water from underground utility installations has been introduced by Kenco, Inc., Lorain, Ohio.

The Kenco Utility Pump operates completely submerged. It is operated by an exclusive Liquid-Level Switch Control.—*Check New Product 265.*

A new HydraRam Knockout Punch Driver for quickly and easily enlarging knockouts or cutting entirely new openings for conduit up to 4 inches has recently been introduced by Greenlee Tool Co. Developing over 11 tons of hydraulic pressure, it drives knock-out punches through 10-gauge metal in a jiffy.—Check New Product 266.



GROUND CLAMPS—New grounding clamps, announced by Thomas & Betts Co., are listed by Underwriters' Laboratories for use on copper water tube, 1/2" to 3/4". Constructed of tough, enduring bronze, their special design prevents them from crushing copper tube. They are also approved for 1/2" to 3/4" copper brass, or iron water pipe and 1/2" to 3/4" ground rod and pipe. A set screw holds the armor.—Check New Product 267.

GROUND ROD CLAMP—A Ground Rod Clamp with a V-shaped slot which clamps tightly to rods and conductors of varying sizes is now made by the A. B. Chance Co., Centralia, Mo.

This feature also centers the wire against the ground rod to obtain maximum contact area. The clamp is high strength bronze. Conductor and rod are held securely with an Everdur Set Screw. —Check New Product 268.

CROSS ARMS—American Cross-Arm, Inc., 141 W. Jackson Boulevard, Chicago, Ill.—[ADV. 18]

DERRICKS—Set more poles with aluminum derricks. Aluminum Co. of America, 1407C Gulf Bldg., Pittsburgh 19, Pa.—[ADV. 19]

"EARTH BORING MACHINES" Sterling Model "A"—Precision Engineered and Hydraulic Controlled. Sterling Engineering & Mfg. Co., 173 Gilligan St., Wilkes-Barre, Pa.—[ADV. 20]

ELECTRIC HOT WATER HEATERS, Thermostatically controlled for any hot water heater, Vulcan Electric Co., Danvers 17, Mass.—[ADV. 21]

ENGINEERING, Construction—Neale Construction Company, 432 Crane St., Topeka, Kans.—[ADV. 22]

FLASH LIGHTS, Carpenter Mfg. Co., 222 Master-Light Bldg., Boston 45, Somerville, Mass.—[ADV. 23]

FLOOR DUCT—The Versatile Floor Duct, Ask your jobber or write, Winders & Geist, Inc., P.O. Box 633, Lincoln, Neb.—[ADV. 24]

GENERATORS—A. C. power anywhere with "Katolight" plants and generators. Kato Engineering Co., 131 Maxfield Ave., Mankato, Minn.—[ADV. 25]

FURNACES—For quickly and economically melting lead and paraffin—Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.—[ADV. 26]

INSPECTION SERVICE—For poles, crossarms, and preservative treatments. Inspectors stationed throughout U.S.A. A. W. Williams Inspection Co., Mobile, Ala.—[ADV. 27]

INSULATORS, Porcelain—Porcelain Products, Inc., Box 300, Findlay, Ohio.—[ADV. 28]

JACKS, for lifting Cable Reels, Pulling Poles and Maintenance Work. Duff-Norton Mfg. Co., 1710 Preble Ave., Pittsburgh 12, Pa.—[ADV. 31]

LANTERNS, WARNING—"Little Air Pilot," the general purpose warning light. Embury Manufacturing Co., 210 Allen St., Warsaw, N. Y.—[ADV. 29]

LIGHTWEIGHT PULLERS—Coffing Hoist Company, 800 Walters St., Danville 5, Ill.—[ADV. 30]

MAILING SERVICE FOR MANUFACTURERS—We will address and mail your direct-mail sales pieces to every telephone company in the United States. Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Ill.

PIPE PUSHERS—Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.—[ADV. 32]

PIPE PUSHERS—Greenlee Tool Co., 2136 12 St., Rockford, Ill.—[ADV. 33]

PINS & BRACKETS—Mfrs of all sizes of Locust Pins and Oak Brackets , The Locust Pin Co., Inc., Front Royal, Va.—[ADV. 34]

PLUGS for the Telephone Industry. Write for Cannon Electric Condensed Catalog. Cannon Electric Co., 3209 Humboldt St., Los Angeles 31, Calif.—[ADV. 35]

POLE HOLE DIGGERS—For derrick mounted trucks Tel-E-Lect Products, Inc., 10009 Minnetonka Blvd., Minneapolis 16, Minn.—[ADV. 36]

POLES—Cedar poles and Fir cross arms. R. G. Haley & Co., Inc., Spitzer Bldg., Toledo 4, Ohio.—[ADV. 37]

POLES, Contract Inspection & Preservative Ground Line Treatment—Osmose Wood Preserving Co., 1443 Bailey Ave., Buffalo 12, N. Y.—[ADV. 38]

POLES, Southern Yellow Pine—Colfax Lumber & Creosoting Co., Inc., P.O. Box 23, Pineville, La.—[ADV. 39]

POLES, Telephone. "It pays to buy quality" International Creosoting & Construction Company. Galveston—Beaumont—Texarkana.—[ADV. 40]

POLES, Creosoted Southern Yellow Pine and Douglas Fir. The Long-Bell Lumber Company, Wood Preserving Div., R. A. Long Bldg., Kansas City, Mo.—[ADV. 41]

POLES, Southern Yellow Pine—Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.—[ADV. 42]

POLES, Southern Yellow Pine—Texas Creosoting Co., Orange, Texas.—[ADV. 43]

POLES—Texas Best pressure-creosoted poles. Lone Star Creosoting Co., P. O. Box 9, Longview, Texas.—[ADV. 44]

POLES—Western Red Cedar, Western Larch, Lodgepole Pine. B. J. Carney & Co., Minneapolis 3, Minn. and Spokane 8, Wash.—[ADV. 45]

POLES & CROSS ARMS—Creosoted poles and crossarms. Conroe Creosoting Co., Conroe, Texas.—[ADV. 46]

POLE LINE HARDWARE—Manufactured and stocked on the Pacific Coast by KORTICK MANFACTURING COMPANY, 345 First St., San Francisco 5, Calif.—[ADV. 47]

POWER UNITS—Insure against Power Failure with a "U.S." Stand-by Unit. Write for information. United States Motors Corp., 558 Neb. St., Oshkosh, Wis.—[ADV. 48]

PROTECTIVE EQUIPMENT—Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.—[ADV. 49]

GAS-TITE CABLE TERMINALS—Sub station protectors, main dist. frames; central office protectors; interior junction boxes; lightning arrestors.—Cook Electric Co., 2700 Southport Ave., Chicago 14, Ill.—[ADV. 50]

PRINTING—Telephone forms. Cullom & Ghertner Co., 600 21st Ave., Nashville 4, Tenn.—[ADV. 51]

RADIO—Two-way radio systems. Motorola, 4545 W. Augusta Blvd., Chicago 51, Ill.—[ADV. 52]

REBUILT TELEPHONE EQUIPMENT—USED EQUIPMENT BOUGHT AND SOLD—Independent Telephone Repair Co., 2137 W. 21st St., Chicago 8, Ill.—[ADV. 53]

REBUILT TELEPHONE & SWITCHBOARDS—Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 2, Ill.—[ADV. 54]

SOLDERING IRONS, Electric—Vulcan Electric Company, Danvers 17, Mass.—[ADV. 55]

SUPPLIES—New all metal heavy duty extension loud ringers; ready wire reels, payout only and payout and takeup in one.—Suttle Equipment Co., Lawrenceville, Ill.—[ADV. 56]

TELERING—Telephone ringing by frequency conversion. Voltage range for all purposes, central office and private branch exchanges. Telkor, Box 186, Elyria, Ohio.—[ADV. 57]

SWITCHBOARDS, TELEPHONES, ETC.—Automatic Electric Co., 1033 W. Van Buren St., Chicago, Ill.—[ADV. 58]

SWITCHBOARDS, TELEPHONES, Etc.—The North Electric Manufacturing Company, Galion, Ohio.—[ADV. 59]

WORK GLOVE:—This new all-purpose work glove has a wing-type all-leather "Dura-Thumb". One continuous seam on the back of the thumb assures longer life for the glove by eliminating stitching at the point of greatest stress—where thumb meets palm. The glove is made by Richmond Glove Corporation and is available in two types—with 4½ inch gauntlet or 2½ inch safety cuff. —Check New Product 269.

TREE EXPERTS—Davey Tree Expert Co., Kent, Ohio.—[ADV. 60]

TRUCK BODIES—Highway Trailer Co., Edgerton, Wisc.—[ADV. 61]

TRUCK BODIES AND EQUIPMENT—McCabe Powers Auto Body Co., 5900 N. Broadway, St. Louis 15, Mo.—[ADV. 62]

TRUCKS—Heavy Duty Engineered To Save You Money"—International Harvester Co., Chicago, Ill.—[ADV. 63]

WIRE DROP & INSIDE—Jackets of neoprene, rubber or plastic. Lowell Insulated Wire Co., Lowell, Mass.—[ADV. 64]

WIRE, Insulated—DATED DROP WIRE—Neoprene or Weatherproof—Alphaduct Wire & Cable Co., Milltown, N. J.—[ADV. 65]

WIRE, Insulated Drop and Bronze or Copperweld—Acorn Insulated Wire Co., Inc., 38 Freeman St., Pawtucket, R. I.—[ADV. 66]

WIRE, Insulated Drop, Genuine Ironite—Paragon Electric Co., Two Rivers, Wis.—[ADV. 67]

WIRE, Insulated Drop, HT Bronze, Paraprene or Braid Insulation—Paragon Electric Co., Two Rivers, Wisc.—[ADV. 68]

WIRE, TELEPHONE, for all inside and outside uses—Whitney Blake Company, New Haven, Conn.—[ADV. 69]

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Telephone Engineer Publishing Corp.
7720 N. Sheridan Road
Chicago 26, Illinois

Please forward complete information on the following products and services described in the October issue of TELEPHONE ENGINEER & MANAGEMENT. (Check information desired.)

NEW PRODUCTS

NP 263..... NP 264..... NP 265..... NP 266..... NP 267..... NP 268..... NP 269.....

SERVICES AND SUPPLIES

ADV. 1.....	ADV. 2.....	ADV. 3.....	ADV. 4.....	ADV. 5.....	ADV. 6.....
ADV. 7.....	ADV. 8.....	ADV. 9.....	ADV. 10.....	ADV. 11.....	ADV. 12.....
ADV. 13.....	ADV. 14.....	ADV. 15.....	ADV. 16.....	ADV. 17.....	ADV. 18.....
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ADV. 31.....	ADV. 32.....	ADV. 33.....	ADV. 34.....	ADV. 35.....	ADV. 36.....
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ADV. 61.....	ADV. 62.....	ADV. 63.....	ADV. 64.....	ADV. 65.....	ADV. 66.....
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TOUGH-GRAINED DOUGLAS FIRS

For *YOUR* Pole Lines

All crossarms look alike in the milling, but the qualities that make one crossarm outlast all others are found in the stock. Rainier crossarms are milled from nature's tough-grained Douglas fir, processed by scientific kiln drying and controlled air seasoning.

When you order crossarms, protect yourself by specifying Rainier Crossarms made by AMERICAN CROSSARM AND CONDUIT CO.

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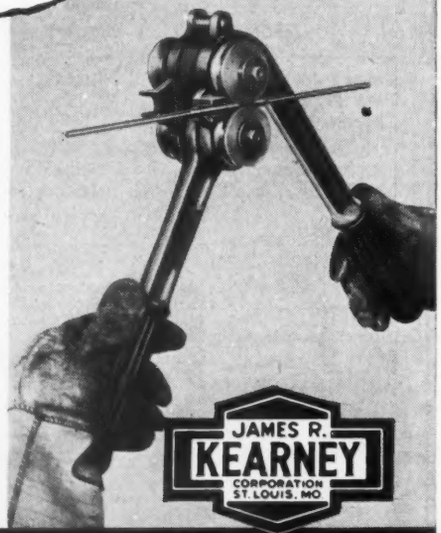
Speed Up Construction and Repair

Eliminate High Resistance Joints by Using Kearney Splicing Machines and Sleeves

By the application of a tremendous pressure, uniformly applied over the entire length of the splicing sleeve, Kearney Splicing Machines provide a splice that exceeds the breaking strength of the conductor.

The job is done quickly and neatly with these well balanced, easy-to-use splicing machines. They are made to extremely close tolerances, from highest quality materials to assure long life. For the best possible job always use Kearney Sleeves with Kearney Splicing Machines.

See your jobber or write to



JAMES R. KEARNEY CORPORATION
4236 CLAYTON AVE. • ST. LOUIS 10, MO.

Overhead and Underground Utility Equipment

Copperweld Steel Co. Wins Safety Award

The National Safety Council has announced that winners in its Safety Contest for the year ending June 30, 1950 include the Non-Ferrous Metals Division, of the Copperweld Steel Co., Glassport, Pa. The Copperweld division led all contestants in the United States and won second place for the best safety record in the entire United States and Canada. W. J. McIlvane, executive vice president of the Wire & Cable Division, stated that Copperweld's exceptionally low accident frequency rate of 1.58, as compared to the average of 5.35 for all industry, is a tribute to the continuous and cooperative efforts of its Union-Management Safety Committee.

Awards will be presented during the 38th National Safety Congress in Chicago, October 16-20, 1950.

"Runabout" Ditcher Has "Hydracrowd" Control

Controlling a variety of digging speeds through the newly developed "Hydracrowd" hydraulic transmission, the operator of Barber-Greene Company's Model 705-A Runabout Ditcher finds his principal controls literally at his finger tips. Except when in over-the-road travel speed, the operator has full control of forward and reverse speed through a hydraulic valve.

This control might be likened to a conventional faucet. As the valve is gradually opened, the speed of the machine increases up to a maximum of 16 ft. per minute. Rapid reverse of the machine, to clear obstructions, etc. is controlled by another hydraulic lever immediately adjacent to the speed control valve.

In addition to the multiple selection of feeding speeds thus available, there are three separate bucket line speeds which may be selected. This combination enables the operator to handle the machine in any surface or underground condition. For example, when digging in frozen ground, or in mud, a high bucket line speed is desirable. So set, the operator gradually increases the forward speed of the machine until the top limit is reached or until the engine begins to labor. If the soil conditions prevent operation at top speed, he simply closes the valve slowly until the engine resumes its normal operation.

The Model 705-A Runabout has been completely re-designed from its radiator shell to the digging boom,

(*Please turn to page* 90)

ACORN INSULATED WIRE

34 years of specialization in the manufacture of communication wires has built an enviable performance record for . . . .

ACORN Drop Wire

also

* Bridle — Interior
* Tree — Ground
* Outside Distributing
* Jumper — Fixture
* Distributing Frame
* Cross Connecting
* Duct

Write for samples of ACORN Insulated Wire TODAY

Your specifications can be met with a wide variety of materials in the form of conductors.

(Solid or stranded: copper, bronze copper-weld, aluminum, iron, etc.), insulation (rubber, plastic, synthetics, etc.), jackets (rubber, plastic, neoprene, etc.), and braids (cotton, glass, silk, etc.), with a variety of braid treatments.

ACORN'S exclusive Carton packaging protects quality and conserves stacking space.

ACORN INSULATED WIRE COMPANY, Inc.

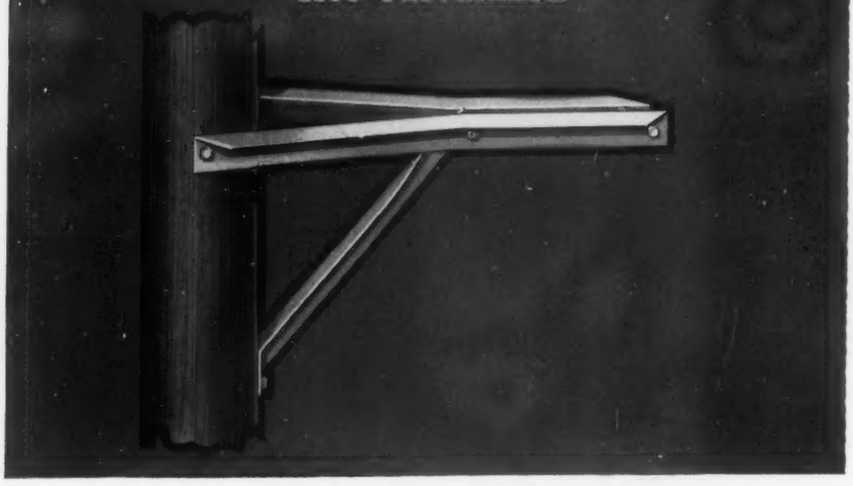
36 Freeman St., Pawtucket, R. I.

LEICH SALES CORP.
427 W. Randolph St., Chicago, Illinois

LINDSAY-SPENCER CO.
7016 Euclid Ave., Cleveland, Ohio

HANG THE LOAD ON

HUBBARD CABLE EXTENSION ARMS
Hot Galvanized



Hubbard Cable Extension Arms, Nos. 8920 and 8921, offer a reliable means of suspending the cable where conditions require that the cable be some distance from the pole. They are attached at the top by a ⅝-inch through bolt. The "T" iron brace is attached by a lag screw. Cables are attached by means of a short ⅝-inch machine bolt with a washer under the head, and a three bolt Cable Suspension Clamp, No. 8903, fastened on the machine bolt under the arm in a flat position.

HUBBARD HARDWARE

HUBBARD AND COMPANY
PITTSBURGH CHICAGO OAKLAND CALIFORNIA

which is raised and lowered by hydraulic power.

The digging range of the machine is 5½, 7½ and 10½ inches in width and up to 4 ft. in depth. Added to this wide range is the extreme portability of the ditcher which travels over the road on its own pneumatic tired chassis at 15 m.p.h.

According to the manufacturer the new Runabout Model 705-A with its "HYDRACROWD" feed is an all weather machine, being equally at home in Winter's frost and frozen ground as in the slippery, muddy conditions of spring or the hard, dry ground of Summer and Autumn.

Bell System Expands TV Networks

The Long Lines Department of the American Telephone & Telegraph Co., which provides inter-city channels for the television broadcasting industry, made a 50 percent increase September 30 in the number of cities connected to its TV networks.

This expansion, largest since the eastern and midwestern tv networks were joined in January 1949, added 14 cities to the present 28-city networks and, for the first time, carries live network television as far south as Jacksonville, Fla. and as far west as Omaha, Neb.

The route extensions bring network service to 19 more television stations covering areas populated by about 12 million people. The Bell System network formerly served 54 stations in areas populated by about 60 million people, according to estimates in the industry. Latest estimates indicate that on September 30 better than 80 percent of the nation's seven and one-half million television sets were in range of live network broadcasts.

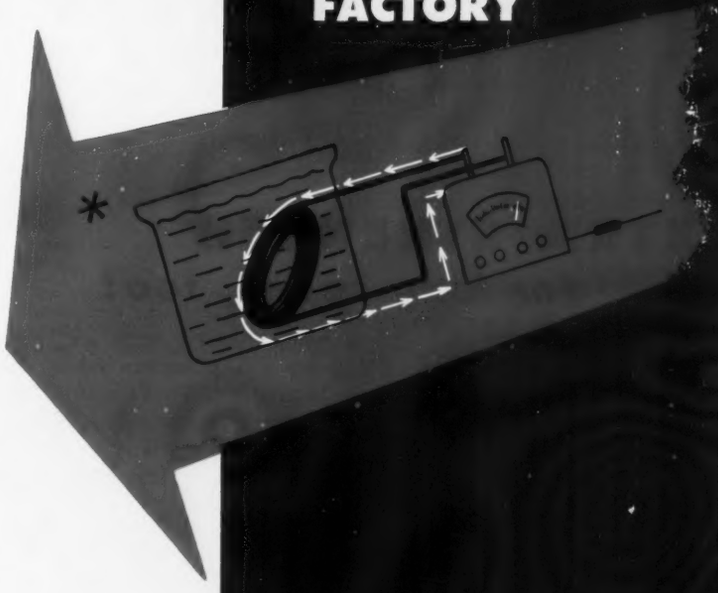
The additional routes, in some areas coaxial cable and in others radio relay, raised total channel mileage to about 17,000, an increase of more than 4,000 miles.

Five of the new network cities are in the southeast—Greensboro and Charlotte, N. C.; Jacksonville; Atlanta, Ga.; and Birmingham, Ala. Two are in the central area—Indianapolis, Ind. and Louisville, Ky., and seven in the west central area, including Rock Island, Ill., Davenport and Ames, Ia., Omaha, Kansas City, Mo. and Minneapolis and St. Paul, Minn.

The five southeastern cities are joined to the network by means of coaxial cable. To provide this service, Long Lines added special equipment

(*Please turn to page* 92)

EVERY COIL OF Alphaduct DROP WIRE IS *WATER TANK TESTED BEFORE IT LEAVES THE FACTORY



You don't have to worry about insulation breakdown when you use Alphaduct drop wire. *Every* coil is tested by submersion in water for nine hours, after which an alternating potential of 1000 volts is maintained between each conductor and the surrounding water for at least five seconds. After this exacting test, every coil must have an insulation resistance of at least 3000 megohms per thousand feet.

Alphaduct is the longest wearing, most satisfactory drop wire you can use. Step-testing, during every phase of manufacture assures you your drops will last and last . . . . and last.

Every coil is dated, so you can easily check its performance for yourself. Moreover, it comes to you in Alphaduct's neat, handy carton packaging.

Alphaduct drop wire is available in twisted pair, parallel or dumbbell type, with bronze or Copperweld conductors. Try it.

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PENTA POLES

FULL LENGTH TREATED *NORTHERN* WHITE CEDAR

They are light in weight, — easier to transport and set; —

They are clean and dry, — easy to climb, — safe for linemen; —

They are pleasing in color, — neat in appearance.

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Armstrong's No. 1

Even when loaded with ice, great lengths of line are safely supported by Armstrong's Glass Insulators. These insulators are made strong enough to carry loads that can bend a metal pin. They'll also stand thermal shocks far more severe than those encountered in normal service.

See your jobber for a sample of Armstrong's Glass Insulators or for information write Armstrong Cork Company, Glass and Closure Division, 295 Fifth Avenue, New York 16, New York.

ARMSTRONG'S GLASS INSULATORS

for communications . . . for power

to an existing coaxial cable which will also continue to carry telephone messages.

Network service will be fed to Indianapolis from Dayton, O. by radio relays. From Indianapolis the service swings south to Louisville over coaxial cable.

Network service to the area west of Chicago is made possible by the completion of the new radio relay route from that city to Omaha. This route is an extensioin of the New York-Chicago radio relay route which went into regular service on September 1.

Davenport and Ames will be joined to the main route by means of short radio relay hops. Rock Island, which is adjacent to Davenport, will be joined to the net at the latter city by special cable. Des Moines, which does not have a TV station in operation at present, is located on the east-west route and serves as a connecting point for a coaxial cable which extends northward to Minneapolis and St. Paul. Kansas City is joined to the network at Omaha by means of coaxial.

The month of September is significant to television viewers on several other counts. On the first of the month the New York-Chicago microwave system was placed in regular operation to supplement the coaxial cable channels which connected the country's two largest cities. A second "mainline" relay system connecting New York and Washington was placed in operation Monday (September 18) to augment existing coaxial routes. Meanwhile, the Pacific Telephone and Telegraph Company at mid-month placed in service a new link connecting Los Angeles and San Francisco.

Ben T. Mueller Retires From West Coast Tel. Co.

Ben T. (Hiline) Mueller recently retired after 38 years' service to West Coast Telephone Co. He has been commercial supervisor since 1937 for West Coast's Northern division—the exchanges in Skagit and Island counties—with headquarters in Mount Vernon, Wash.

Succeeding Mr. Mueller is Jim Bricker, from the Everett office. Mr. Bricker was with the Army Signal Corps during the war, later was employed by the Bell system in Seattle and recently, since his graduation from the University of Washington, joined the West Coast staff.

Mr. Mueller entered telephone work at Everett in 1912, came to Mount Vernon and served as installer and repairman until he took over the supervisor's post in 1937.

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GREENLEE PIPE PUSHER

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Other GREENLEE tools for telephone work . . .

Do the job faster, better with high quality GREENLEE Car Bits for pole work . . . Electricians' Auger Bits of special design for electrical installation work . . . Bell Hangers' Drills of the "Feeler Bit" type . . . Expansive Bits for boring ½" to 4" holes . . . and GREENLEE Angle-Screw Drivers which eliminate pre-boring for angle-screw installations.

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Get facts on timesaving Greenlee tools. Write Greenlee Tool Company, 2010 Columbia Ave., Rockford, Illinois.

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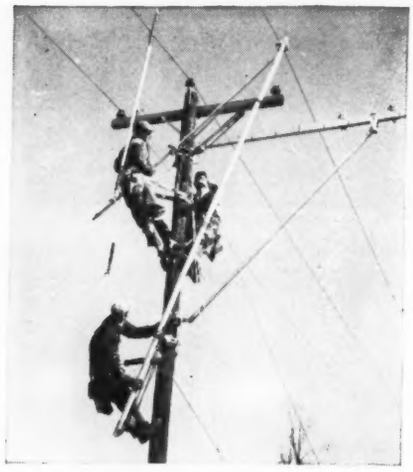

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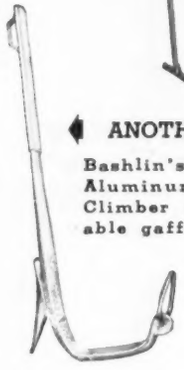
Men who think first of safety and efficiency on the job — use Bashlin Equipment.



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Self-locking screws assemble precision machined parts.

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GROVE CITY 1, PA.

The Back of The Book

By JOHN G. REYNOLDS

Retirement Plan . . . You probably have heard many times that dog-eared cynicism, "Oh, I'll retire on the income from my debts." Sounds funny but not to **Harvey H. Meyers.**

Myers, a resident of North Arlington, N. J., is on the road to a retirement fund which is being created by debt-paid debt.

Myers for 12 years has been buying stocks on the installment plan the same way people buy cars, radios, washing machines, etc. Twelve years ago he realized the inadequacy of fixed income in a world of constantly changing money values and recognized that a pension would have to be supplemented by income from other sources.

The answer, in his judgment, was selected common stocks . . . How to acquire these stocks was a real problem. He was employed at a slightly higher than average salary, but to accumulate enough money in a lump sum would not be easy. Then his plan was formulated. People purchased cars, radios, washing machines, etc. on the instalment plan. Why not stocks?

Myers then borrowed money from a bank on 12 shares of **American Telephone & Telegraph Co.** stock which he had purchased through the company on an employe deduction plan. With the proceeds he bought other stocks. His formula has been to repeat this practice over the years.

Today he has a portfolio of high-grade stocks, exclusive of his original AT&T shares, worth $30,245, in today's market for which he paid $23,381. They should pay him $1,775 in dividends this year.

• • •

Boiler Flues For Poles . . . An old-timer from Nebraska reports that discarded locomotive boiler flues provided the poles for the first telephone system built in Scotts Bluff County, Neb. The line was built between Gering and Alliance in 1898, and **Martin Gering** was president. **J. R. Phelan,** head of the Burlington R.R. offices at Alliance, donated the flues. Toll stations were established along the line, and toll calls were recorded at Malinda, the half-way station, where **Mrs. Joseph Wildy** was the operator. . . . Perhaps some Nebraska veteran remembers this line. If so, we'd like to hear more about it.

• • •

"The Missing Hole" . . . The question of the little hole that wasn't there had Omaha, Neb., telephone company officials' ears ringing.

"We didn't forget the hole; we just decided not very many people wanted it," explained **R. O. Bartling,** directory manager of Northwestern Bell.

Only a smattering of the 113 thousand telephone directories recently distributed in Omaha, Nebraksa, had the tiny holes in the upper left corner. These were meant to be hung in public places.

Other telephone users, Mr. Bartling predicted, will be just as happy their books have no holes.

"We find that if somebody puts a string through his directory he has a torn book in no time at all," the directory manager asserted. "Our books are just too heavy this year for hanging. The 'no hole' is a trend adopted by all the larger cities."

World-Herald Columnist **Guy Williams,** however, disagreed.

He—who brought up the subject originally—termed the telephone company's stand a "great public disappointment," said he was busily digging his own hole in his telephone directory.

The LORAIN SUB-CYCLE RT-UNITS

PACKAGED POWER for P. B. X. and SMALL SWITCHBOARDS

R Stands for ringing. T stands for talking. An "RT-UNIT" combines in one cabinet both ringing and talking power supply.

12 NEW MODELS in 5 CABINET SIZES

RT-UNITS

MODEL RT-1
3½ Watts, 20 Cycles
BC Self-starting Sub-Cycle
+.87 amp 14-28V. DC Supply for talking
+.5 amp unfiltered DC for signalling
+10 ±1V. and 20 V. ±2V.
60 Cycles for signalling

MODEL RT-2
3½ Watt 20 Cycle BC self-starting Sub-Cycle
2 amp 24 or 34 V. DC for talking supply

MODEL RT-3
3½ Watt 30 Cycle BC self-starting Sub-Cycle
All other features same as Model RT-1 but less expensive

MODEL RT-4
3½ Watt 30 Cycle BC self-starting Sub-Cycle
All other features similar to Model RT-2 but less expensive

T-UNITS

DC POWER SUPPLY PROVIDES

MODEL T-1
0.87 amp 14-28 V. DC for talking

MODEL T-2
2.0 amp 24 or 34 V. DC for talking

MODEL T-3
0.5 amps 22-30 V. DC for talking

MODEL T-4
1.0 amp 40-52 V. DC for talking

MODEL T-5
0.5 amp 10-16 V. DC for talking

MODEL T-6
1.0 amp 5.8 V. DC for talking

SUB-CYCLE

RINGING POWER SUPPLY
BIASED-CORE (BC)
Self-starting, protected on overload
Model BC-30X – 50 ma. 30 Cycles 100-115 V.
Model BC-20X – 50 ma. 20 Cycles 75-95 V.

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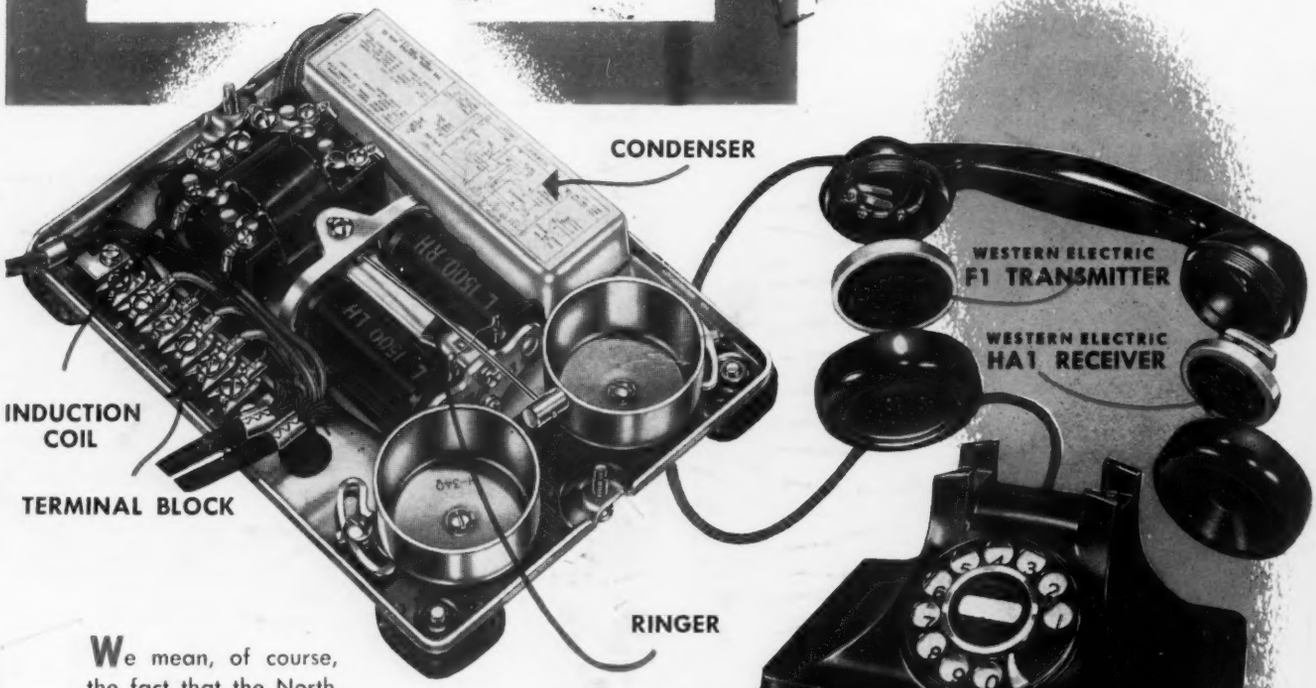

We mean, of course, the fact that the North telephone is modern in every respect—yet, every feature has stood the test of time!

Thanks to North's foresighted engineering policy (which developed many of today's accepted features years ago) you have the combined and unusual advantages of time-tested, time-proven dependability, plus every up-to-date feature.

You can defeat obsolescence, meet any service demand and gain subscribers' confidence by installing North telephones. Their modern design and universally acceptable styling assures a better return on your telephone investment.

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Originators of **ALL RELAY** *Systems of Automatic Switching*